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FIRST QUARTER MONITORING REPORT

JANUARY TO MARCH 2000

KIN-BUC LANDFILL OPERABLE UNITS 1 AND 2

Prepared for

SCA Services, Inc.
Edison Township, Middlesex County, New Jersey

May 2000

Prepared by

OWT Solid Waste Services
Crossroads Corporate Center
One International Boulevard, Suite 700
Mahwah, New Jersey 07495

OWT Project 791186

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SUMMARY

The Kin-Buc Landfill Site is a closed 200-acre industrial/commercial landfill located in Edison, New Jersey, which operated under a New Jersey Department of Environmental Protection (NJDEP) permit until 1976. The USEPA placed the Kin-Buc Landfill on the National Priorities List (NPL) in 1981. Between 1983 and 1988, the Respondents conducted a Remedial Investigation/Feasibility Study (RI/FS) which resulted in a Record of Decision (ROD) by USEPA in 1990 which called for source control of Operable Unit 1 (OU1), and an additional RI/FS to determine the nature and extent of contamination outside the source area, thus defining Operable Unit 2 (OU2).

Operable Unit 1 includes both Kin-Buc I and II Mounds, the former Pool C Area and a portion of the Low-Lying Area between Kin-Buc I and the Edison Landfill. The remedial action specified in the ROD for OU1 included the construction of a slurry wall around OU1, the collection and treatment of leachate and groundwater from within the containment area and the capping of the area within the slurry wall. Operable Unit 2 includes Mound B, Edmonds Creek and adjacent wetlands, the remaining Low-Lying Area between OU1 and the Edison Landfill, Martins Creek and the Raritan River. The OU2 ROD called for the excavation and disposal of PCB-contaminated sediments from within the Edmonds Creek Marsh Area, the restoration of disturbed wetland areas and groundwater/surface water monitoring. Remedial construction activities for both OU1 and OU2 were completed by the end of August 1995. In accordance with the RODs, hydraulic monitoring and landfill gas monitoring is conducted quarterly to evaluate the effectiveness of the remedial actions. This report documents the results of the First Quarter of 2000 monitoring activities.

The key findings made during the First Quarter of 2000 are summarized as follows:

- Three months of continuous water level monitoring data indicates that intragradient conditions were maintained at TL Nos. 2, 3, 4 and 5 within the refuse unit of OU1 and the Oil Seeps Area. Although present at various times, intragradient conditions were not maintained at TL No. 1 throughout the quarter.

- Artificially high refuse groundwater (leachate) heads are still present at W-1G (TL-1) due to an apparent clog in the perimeter leachate collection system. However, due to recent success in evacuating leachate from Clean-Out #16, the hydrograph for W-1G depicts the beginning of a slow, steady decline in refuse groundwater levels towards the end of the quarter at this location.

- Based on the three synoptic rounds of manual water level measurements within Operable Unit 1, an even to upward vertical gradient between the bedrock unit and the overlying sand and gravel unit is being consistently maintained. In only one instance (at W-3S/W-3RR, on February 28, 2000) was a slight downward gradient between the sand & gravel unit and bedrock unit observed.

- The Light Non-Aqueous Phase Liquid (LNAPL) (oil product) levels ranged between 0.4 and 3 feet in monitoring well W-3G during the quarter.

- Combustible gas was not detected in any of the 6 gas monitoring wells located on the north side of OU1. Monitoring at the operational flare port inlet revealed that the landfill gas collection system was delivering 49.1 percent combustible gas (methane) to promote proper combustion at the flare.

1 INTRODUCTION

The purpose of this report is to present hydraulic and landfill gas migration monitoring results for the modified OU1 and OU2 monitoring program for the First Quarter of 2000. The data obtained during this monitoring period will be used to supplement a database that documents the modified monitoring program findings. The report comments on hydraulic control for OU1 inside and outside of the circumferential soil-bentonite slurry wall, which will be used to evaluate the performance of the collection system and slurry wall as a hydraulic barrier. Landfill gas monitoring results are examined relative to operational flare performance and soil gas migration outside the slurry wall.

1.1 First Quarter Monitoring Activities

Monitoring and sampling for the First Quarter of 2000 (January to March) took place according to the procedures and methods outlined in the Draft Operations and Maintenance (O&M) Manual for the Kin-Buc Landfill prepared on behalf of the Respondents by Wheelabrator EOS in September 1995 and modified by letter to EPA dated February 28, 1996. The modified hydraulic monitoring program will be approved by the USEPA upon final approval of the Draft O&M Manual. Continuous water level monitoring for the First Quarter of 2000 was obtained during January, February and March. Eighteen In-Situ "Trolls" in the OU1 refuse and sand/gravel wells have generated 3 months of water level data that are evaluated in Sections 3 and 5 of this report.

Landfill gas migration monitoring was performed at the operational flare port inlet and the six gas migration monitoring wells located along the northern edge of the landfill boundary.

2 DESCRIPTION OF MONITORING PROGRAM

2.1 Operable Unit 1 Hydraulic Control

The hydraulic monitoring system for Operable Unit 1 is located along the circumferential slurry wall in the component areas consisting of:

- Kin-Buc I Mound
- Kin-Buc II Mound
- Pool C Area
- Low-Lying Area contained by circumferential slurry wall
- Oil Seeps Area

The hydraulic monitoring well network consists of 12 wells screened in the refuse/fill, 8 wells screened in the sand & gravel, and 10 wells screened within bedrock. Of these wells, 18 wells are continuously monitored and have been identified on Table 2-1. The OU1 hydraulic well network is designed to monitor groundwater elevations inside and outside of the circumferential slurry wall to evaluate the performance of the collection system and slurry wall as a hydraulic barrier. The hydraulic monitoring wells are located along 5 transects which are installed in pairs to monitor the same hydrogeologic units across the slurry wall, so that elevations on either side of the wall can be compared and evaluated. The well pairs are indicated in Table 2-1.

At three transect locations (TLs), the hydraulic monitoring wells are installed as pairs that monitor the refuse and sand & gravel units as well as bedrock. These locations are:

- Transect Location No. 2: W-3G/W-4G, W-3S/W-4S, W-3RR/W-4R
- Transect Location No. 3: W-5G/W-6G, W-5S/W-6S, W-5R/W-6R
- Transect Location No. 4: W-15G/W-13G, W-15S/W-13S, W-7S/W-8S, W-7R/W-8RR

Two TLs have hydraulic monitoring wells installed as pairs in the refuse unit and bedrock unit. Due to the absence of sand and gravel deposits in these areas, no sand & gravel wells are present. The two transect locations are:

- Transect Location No. 1: W-1G/W-2G, W-1R/W-2R
- Transect Location No. 5: W-9G/W-10G, W-9R/W-10R

A discussion of groundwater elevation observations for OU1 follows in Section 3.1. OU1 hydraulic monitoring results are summarized in Section 5.1 through 5.3.

2.2 Operable Unit 2

The hydraulic monitoring system for OU2 consists of the wells indicated on Table 2-2. The wells are monitored concurrent with the OU1 manual water elevation measurements. The OU2 hydraulic monitoring well network monitors elevations in the Low-Lying Area and Mound B following containment of OU1. A discussion of groundwater elevation observations follows in Section 3.2 and is summarized in Section 5.4.

2.3 Landfill Gas Migration

The landfill gas migration monitoring system consists of 6 wells screened in the overburden outside the circumferential slurry wall along the northern edge of the landfill border. The operational flare port inlet is located along the blower run just prior to the destruction flare and provides total methane concentration of the gas stream reaching the flare unit.

3 HYDRAULIC MONITORING

The hydraulic monitoring program for OU1 has been designed to assess the hydraulic performance of the collection systems and circumferential slurry wall. Specifically, the maintenance of lower hydraulic heads inside relative to outside of the slurry wall in the refuse unit represents intragradient conditions. This condition would minimize the potential for contaminant migration beyond the limits of the wall. Also, the monitoring program assesses the ability of the groundwater pumping inside the wall to achieve and maintain an upward gradient between the bedrock and the overlying sand and gravel deposits. The attainment and maintenance of upward vertical gradients will minimize the potential for vertical migration of contamination into the bedrock groundwater regime.

3.1 Operable Unit 1

Hydraulic monitoring has been conducted at the site pursuant to the Hydraulic Performance Monitoring Plan as revised in February 1996. Components of the hydraulic monitoring program consist of continuous and manual water level measurements in the refuse and sand & gravel wells and manual measurements in the bedrock wells, immediately inside and outside of the circumferential slurry wall. Continuous water level measurements were obtained at one-hour intervals using an In-Situ "Troll" Model SP4000 data logger and transducer. Manual measurements were obtained with an electronic water level indicator. The six TLs are shown on Drawing 1.

Hydraulic monitoring took place at the site from December 23, 1999 to March 26, 2000 for the First Quarter of 2000. Three months of continuous water level data have been obtained from the refuse and sand & gravel wells. From these wells, a monthly minimum and maximum water level elevation was determined and is provided in Table 3-1. Due to a problem with troll downloading at well W-15G, continuous monitoring data for March was not avaliable. Manual measurements were obtained on January 4, February 8 and February 28, 2000. Two rounds of manual measurements were recorded in February, prior to pump testing activities. The manual water level monitoring results are provided on Table 3-2.

The continuous water level monitoring information and Troll operation were checked by comparing the Troll continuously recorded water elevation results with the three manual

water level elevation event results. Any Troll operational difficulties or apparent data set discrepancies are discussed in Section 5.2 of this report.

3.2 Operable Unit 2

Manual measurements were also obtained from the Operable Unit 2 which includes the Low-Lying Area and Mound B (Figure 1-1). Manual measurements were obtained January 4, February 8 and February 28, concurrent with the hydraulic monitoring in OU1. The manual water level monitoring results are provided on Table 3-2.

3.3 Leachate Withdrawal/Groundwater Pumping

The performance of the site hydraulic controls is largely dependent upon groundwater pumping and leachate withdrawal rates. Current aqueous leachate (LCH) collection system and groundwater (GW) withdrawal rates differ somewhat from the rates used for design of 3:1, groundwater to leachate (30,000 gpd GW:10,000 gpd LCH). The variation in collection rates is due to changing site conditions and operational conditions.

Operation records are maintained at the site and contain estimated daily averages for leachate and groundwater withdrawal. According to the information provided by site personnel, the average monthly groundwater withdrawal rate for the quarter was greater than 232,654 gallons. Groundwater withdrawal for the quarter is higher than the previous quarter. Leachate withdrawal for the quarter varied, due to pumping tests performed in February. The estimated monthly daily average flows were:

Monitoring Period	Groundwater Withdrawal (gpd)	Leachate Withdrawal (gpd)
January	4,571	3.7
February	7,983	0
March	10,476	231

Groundwater and leachate collection quantities and rates were impacted this quarter by the pumping well test program performed at groundwater collection well S&G-2 between February 17 and 25, 2000. Groundwater pumping was suspended for at least two periods in advance of the pumping tests: first, to gather background groundwater conditions without pumping, and second, to allow groundwater to equilibrate to background conditions prior to the testing. Leachate pumping was also suspended during these

periods to assess whether or not refuse groundwater levels are impacted by groundwater collection. During the pump tests, 101,090 gallons of groundwater were collected and discharged to the on-site leachate treatment facilities for treatment. This volume of water was included when determining the gallons/day reported above for February. Groundwater pumping test results will be reported separately. After completion of on-site pump tests, pumping of leachate was resumed at a low rate, approximated by the average rate reported above for March.

Although no gradient reversal has been observed, low rate leachate pumping will assure that no notable rise in leachate levels within the OU1 containment will occur. Withdrawal totals are estimated and actual withdrawal volumes may differ. The withdrawal rates are examined relative to the hydrographs supplied in Appendices A and B, as well as vertical gradients provided in Table 5-1. Section 5 of this report presents the observations based on this information.

4 LANDFILL GAS MIGRATION MONITORING

All areas of OU1 exterior to the slurry wall contain waste materials except along the northern edge of the landfill boundary. Gas monitoring in the areas containing waste materials will likely reveal combustible gas. Since no on-site OU1 buildings are present except the leachate treatment facility, which has its own engineered gas monitoring and control system, gas migration monitoring in the waste areas is not required by the O&M manual.

The purpose of the gas migration monitoring program is to monitor for off-site gas migration in those areas where gas migration or accumulation could lead to explosive conditions. Six gas migration monitoring wells are located outside of the circumferential slurry wall along the northern edge of the landfill boundary. The well locations are depicted on Drawing 1 and are spaced in 200-foot increments. High levels of gas are not expected to be detected for the following reasons: the slurry wall will act as an effective barrier, the presence of an active gas extraction system and a high water table that will inhibit gas migration.

4.1 Gas Monitoring Well Results

Measurements of percent combustible gas (% GAS) and percent lower explosive limit (% LEL) were performed in the six gas migration monitoring wells indicated in Table 4-1 on February 8, 2000. The wells were monitored according to Attachment 1, Section 3.0 Routine Operations and Maintenance, of the Kin-Buc Landfill Draft O&M Manual (Wheelabrator, 1995). A Landtec GEM 500 was used to measure the concentration of combustible gas at each well by attaching the meter's sample tubing to the well head petcock and drawing the sample through the meter. Detectable levels of percent combustible gas and percent lower explosive limit were not detected in any gas monitoring wells. The results of the six gas migration monitoring wells are shown on Table 4-1.

4.2 Operational Flare Monitoring Results

The percent combustible gas by volume (% GAS) at the landfill's operational flare was recorded during the first quarter. Monitoring with a GEM 500 revealed combustible gas at the flare port inlet at 49.1 percent.

5 HYDRAULIC MONITORING RESULTS SUMMARY

The hydraulic monitoring program calls for the preparation of tables and hydrographs summarizing groundwater gradient conditions at the site. Previously presented in Section 3, Table 3-2 summarizes the manual water level measurements obtained from the OU1 and OU2 monitoring wells. Table 5-1 provides a summary of the vertical gradients (upward or downward) at the different well cluster locations during the First Quarter of 2000. Appendix A provides hydrographs of continuous water level measurements of the refuse wells inside and outside the slurry wall. Each hydrograph consists of an interior and exterior refuse well at each individual transect location for visual assessment of gradient conditions. Appendix B contains the individual hydrographs for each well where continuous monitoring was conducted, including the sand & gravel wells.

The following Sections 5.1-5.3 include a discussion of the results of the hydraulic monitoring program. Section 5.4 provides the conclusions for the hydraulic monitoring activities and recommendations for facility performance.

5.1 Assessment of Intragradient Conditions Within the Refuse - OU1

A review of Appendix A, which represents hydrographs of refuse wells inside and outside the circumferential slurry wall at TL Nos. 1 through 5 indicates that intragradient conditions were maintained at TL Nos. 2, 3, 4 and 5 throughout the quarter. According to the hydrographs of these paired wells, the head levels in the refuse are lower inside the wall relative to outside the wall. At TL No. 1, head levels outside OU1 were often higher than those inside OU1, although this condition was not observed throughout the quarter. It should be noted that for a period from February 16 through February 22 continuous monitoring data is not available for many of the wells. It was during this time that the trolls were re-programmed in preparation of the up-coming pump test at the site. Data from this 1-week period is not included in many of the hydrographs.

At TL No. 1, troll measurements indicate that intragradient conditions were not maintained throughout the quarter. However, during periods of intragradient conditions, the difference in head elevations between the two wells was as high as 3 feet.

At TL No. 2 (W-3G/W-4G), intragradient conditions were maintained throughout the quarter. The difference in head elevations between the two wells was approximately 0.7 feet. Also noted is a rise in the leachate level at W-3G around February 23 due to leachate transfer from clean-out No. 16 (near W-1G) to clean-out No. 15 (towards TL 2) in order to reduce the high leachate heads at TL 1.

At TL No. 3 (W-5G/W-6G), intragradient conditions were maintained throughout the quarter. The head elevation difference between the two wells was approximately 3 feet.

At TL No. 4 (W-15G/W-13G), across the Oil Seeps Area extended slurry wall, intragradient conditions were evident throughout the quarter. The average head elevation difference between the two wells was generally 5 feet.

At TL No. 5 (W-9G/W-10G), intragradient conditions were maintained throughout the quarter. The average head elevation difference between the two wells was approximately 0.7 feet.

5.2 Continuous Hydraulic Monitoring Results vs. Manual Elevation Measurements

Troll transducer and data logger operation during the First Quarter of 2000 was found to be satisfactory. For all three water level monitoring events, the manual water level elevation measurements and Troll recordings for the same day and hour were found to be in general agreement (within a tenth).

5.3 Assessment of Vertical Hydraulic Gradients - OU1

Table 5-1 summarizes the vertical gradients between the monitoring well clusters along the TLs based on synoptic measurements made on January 4, February 8 and February 28. For the original OU1 containment, vertical gradients are examined between the sand & gravel and bedrock wells to assess the effects of groundwater pumping on the hydraulic gradient between the bedrock and sand/gravel units. These synoptic measurements represent a snap shot picture of conditions at the site.

Generally, the pumping in the sand and gravel has provided upward to even gradient conditions from the bedrock to the sand & gravel inside the slurry wall at all locations with the exception of W-3S/W-3RR on February 28.

For the supplemental containment at the Oil Seeps Area, vertical gradients are examined between the sand and gravel and refuse wells to assess the effects of leachate removal on the hydraulic gradient between the monitored geologic units. An upward to even gradient

was evidenced from the sand and gravel to the refuse at W-15G/W-15S during each of the three manual monitoring measurement periods this quarter.

5.4 OU2 Hydraulic Monitoring

The synoptic groundwater elevations obtained during the First Quarter of 2000 indicate both upward and downward hydraulic gradients.

Downward hydraulic gradients prevail between the refuse and the underlying sand & gravel. Downward hydraulic gradients were only noted between the overlying sand & gravel and bedrock units at WE-10S/WE-10R on January 4, WE-3S/WE-3R on February 28, GEI-6S/WE-6R on February 8 and 28, and WE-7S/WE-7R on February 8.

REFERENCES

Proposed Groundwater Monitoring Plan for the Kin-Buc Landfill Operable Unit 1 RD/RA, Wehran Engineering Corporation, Middletown, New York, December 1992.

Final Addendum 1 to the Proposed Groundwater Monitoring Plan for the Kin-Buc Landfill Operable Unit 1 Closure Plan Re: OU2 Groundwater and Surface Water Monitoring, Wehran Engineering Corporation, Middletown, New York, August 1994.

Draft Operations and Maintenance Manual for the Kin-Buc Landfill, Wheelabrator EOS, Inc., Pittsburgh, PA, August 1995.

Remedial Action Report for Operable Unit 2 for the Kin-Buc Landfill Superfund Site, Blasland, Bouck & Lee, Inc., January 1996.

Appendix C Groundwater, Surface Water, Wetlands and Biota Monitoring Plans for the Kin-Buc Landfill Operable Units 1 and 2, Wheelabrator EOS, Inc., Pittsburgh, PA, August 1995.

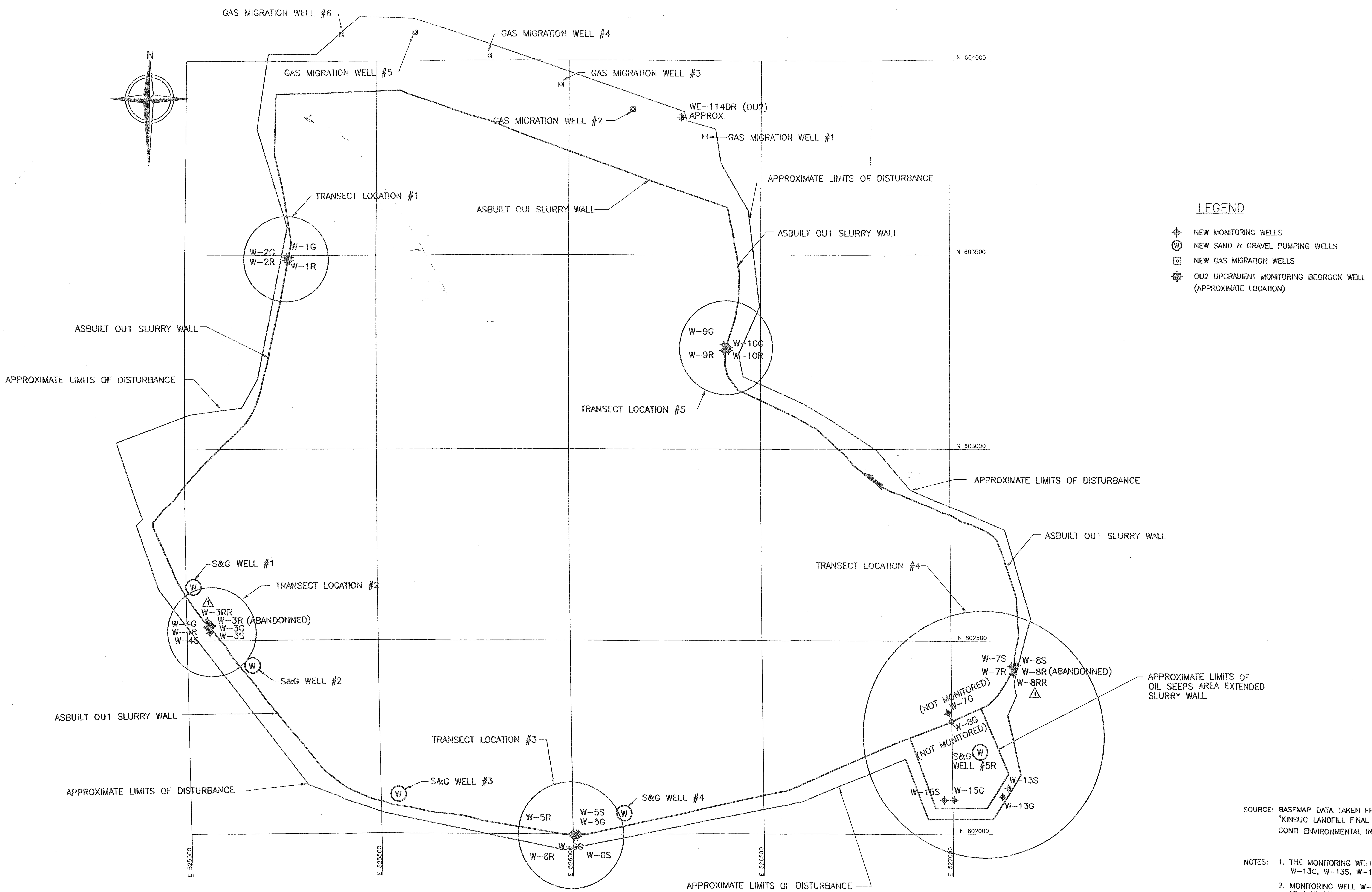
Remedial Action Report Volume I Remedial Action Report, Tables, Appendices A1-A5 for the Kin-Buc Landfill Operable Unit 1, Blasland, Bouck & Lee, Inc., September 1995, Revised February 1996.

Draft Remedial Investigation Report for Kin-Buc Landfill Operable Unit 2, Wehran Engineering Corporation, Middletown, New York, October 1990.

Influent Equalization Logs, (Wheelabrator), Inc., Kin-Buc Landfill Treatment Plant, January 1997, February 1997, March 1997.

Kin-Buc Landfill Leachate Treatment Plant Operation and Site Post-Closure Care, Monthly Reports, Wheelabrator EOS, April, May, June 1997.

Drawing



SOURCE: BASEMAP DATA TAKEN FROM PLAN SHEET 10A OF MAP ENTITLED "KINBUC LANDFILL FINAL WELL LOCATION PLAN" PREPARED BY CONTI ENVIRONMENTAL INC. DATED JULY 17, 1995.

NOTES:
1. THE MONITORING WELL LOCATIONS W–7G, W–8G, W–13G, W–13S, W–15G, AND W–15S ARE APPROXIMATE.
2. MONITORING WELL W–8R IS DAMAGED AND NOT SERVICABLE AS A WATER QUALITY MONITORING POINT.
3. MONITORING WELLS W–7G AND W–8G REPLACED BY W–15G AND W–13G.
4. MONITORING WELLS W–8R AND W–3R ABANDONED AND REPLACED BY NEW MONITORING WELLS W–8RR AND W–3RR RESPECTIVELY.

0 150 300
SCALE IN FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	2/99	ADD NEW WELLS				

DATE OF ISSUE 5/96 — DWN BY SDT — DES BY RB — CHK BY — APP BY

EMCON

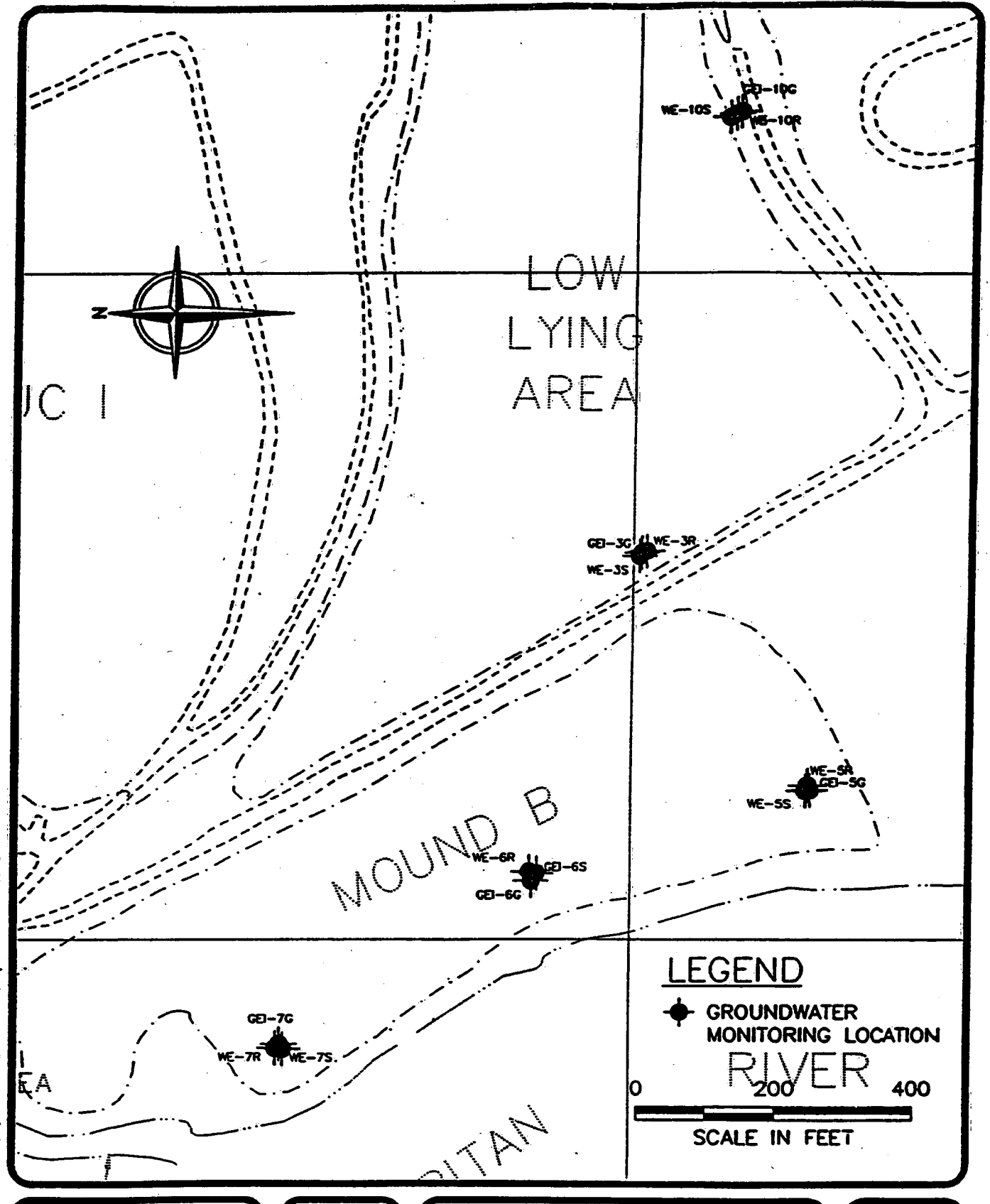
KIN–BUC LANDFILL
EXISTING GROUNDWATER MONITORING PLAN
EDISON TOWNSHIP, NEW JERSEY

OPERABLE UNIT 1 MONITORING NETWORK

DRAWING NO. 1

PROJECT NO. 01852-025.000

Figure



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KINBUC LANDFILL

EDISON TOWNSHIP, NEW JERSEY

OU2 GROUNDWATER MONITORING LOCATIONS

FIGURE
1-1
PROJECT NO.
12568-001.000

TABLES

Table 2-1

Kin-Buc Landfill
Operable Unit 1
Continuous Hydraulic Monitoring Well Network/Transects

Transect Location No.	Screened Hydrogeologic Unit	Well Location Inside Slurry Wall	Well Location Outside Slurry Wall
1	Refuse/Fill	W-1G	W-2G
2	Refuse/Fill Sand and Gravel	W-3G W-3S	W-4G W-4S
3	Refuse/Fill Sand and Gravel	W-5G W-5S	W-6G W-6S
4	Refuse/Fill[1] Sand and Gravel[1] Sand and Gravel[2]	W-15G W-15S W-7S	W-13G W-13S W-8S
5	Refuse/Fill	W-9G	W-10G

Notes: [1] Wells located across the extended slurry wall.
[2] Wells located across the OU1 circumferential slurry wall

Table 2-2

Kin-Buc Landfill
Operable Unit 2
Hydraulic Monitoring Network

Well Location	Screened Hydrogeologic Unit
Low-Lying Area	
GEI-10G	Fill/Refuse
WE-10S	Sand & Gravel
WE-10R	Bedrock
GEI-3G	Fill/Refuse
WE-3S	Sand & Gravel
WE-3R	Bedrock
Mound B	
GEI-5G	Fill/Refuse
WE-5S	Sand & Gravel
WE-5R	Bedrock
GEI-6G	Fill/Refuse
GEI-6S	Sand & Gravel
WE-6R	Bedrock
GEI-7G	Fill/Refuse
WE-7S	Sand & Gravel
WE-7R	Bedrock
Upgradient	
WE-114DR	Bedrock

Table 3-1
KinBuc Landfill Operable Units 1 and 2
Continuous Hydraulic Monitoring Results
Monthly Minimum/Maximum Water Elevations

Inside Slurry Wall				Outside Slurry Wall			
Well ID	Monitoring Month	Minimum Recorded Water Elevation	Maximum Recorded Water Elevation	Well ID	Monitoring Month	Minimum Recorded Water Elevation	Maximum Recorded Water Elevation
W-1G	January	12.25	12.48	W-2G	January	9.94 DRY	14.48
	February	12.07	12.39		February	9.94 DRY	15.54
	March	11.85	12.16		March	9.94 DRY	14.15
W-3G	January	9.60	10.55	W-4G	January	10.58	11.32
	February	9.7	10.66		February	10.52	11.38
	March	10.28	10.89		March	10.77	11.70
W-3S	January	-0.97	2.86	W-4S	January	-1.27	3.47
	February	-0.99	2.15		February	-0.97	2.27
	March	-0.41	2.86		March	-0.80	2.90
W-5G	January	10.13	10.96	W-6G	January	12.42	13.78
	February	10.16	11.02		February	12.47	13.67
	March	10.16	11.16		March	12.75	13.96
W-5S	January	0.3	2.94	W-6S	January	0.48	3.02
	February	0.33	2.17		February	0.42	2.24
	March	0.54	2.58		March	1.00	2.94
W-15S	January	1.02	3.52	W-13S	January	1.37	3.85
	February	0.76	2.94		February	1.34	3.23
	March	1.09	3.34		March	1.75	3.51
W-15G	January	0.6	1.90	W-13G	January	6.21	6.95
	February	0.76	1.70		February	6.22	7.07
	March	-	-		March	6.25	6.88
W-9G	January	7.06	7.45	W-10G	January	8.03	8.17
	February	6.99	7.29		February	7.91	8.19
	March	7.00	7.69		March	7.98	8.18

Table 3-2
KinBuc Landfill Operable Units 1 and 2
Modified Monitoring Program
First Quarter 2000
Manually Recorded Water Level Elevations

Well ID	TOC Bottom	TOC Ref Elevation	January 4, 1999		February 8, 1999		February 28, 1999	
			TOC Static	Elevation	TOC Static	Elevation	TOC Static	Elevation
OU1								
W-1G	20.50	30.78	18.30	12.48	18.63	12.15	18.63	12.15
W-1R	35.34	30.79	19.19	11.60	20.02	10.77	19.25	11.54
W-2G	20.83	30.77	Dry	<9.94	Dry	<9.94	17.01	13.76
W-2R	35.33	30.64	22.66	7.98	23.69	6.95	22.89	7.75
W-3G (oil)	19.07	20.73	10.52	10.21	10.74	9.99	10.31	10.42
W-3G	19.07	20.73	13.49	7.24	11.20	9.53	10.87	9.86
W-3S	31.48	20.79	18.66	2.13	21.02	-0.23	19.17	1.62
W-3RR	54.40	21.16	19.07	2.09	21.51	-0.35	19.90	1.26
W-4G	17.57	20.23	9.35	10.88	9.74	10.49	9.06	11.17
W-4S	31.58	19.71	17.78	1.93	19.79	-0.08	19.10	0.61
W-4R	54.92	20.61	18.64	1.97	20.80	-0.19	20.04	0.57
W-5G	24.36	23.94	13.27	10.67	13.72	10.22	13.29	10.65
W-5S	30.33	24.33	22.06	2.27	23.71	0.62	22.40	1.93
W-5R	41.64	24.11	21.89	2.22	23.60	0.51	20.74	3.37
W-6G	23.99	23.69	10.41	13.28	11.28	12.41	10.29	13.40
W-6S	38.49	24.00	21.72	2.28	23.30	0.70	21.96	2.04
W-6R	50.43	23.99	21.75	2.24	23.30	0.69	21.97	2.02
W-7G	19.91	18.30	7.45	10.85	8.32	9.98	7.58	10.72
W-7S	29.34	11.61	9.16	2.45	10.72	0.89	9.38	2.23
W-7R	45.13	11.05	8.56	2.49	10.11	0.94	8.78	2.27
W-8S	28.86	10.92	8.65	2.27	8.98	1.94	8.65	2.27
W-8RR	41.60	9.51	7.06	2.45	7.39	2.12	7.17	2.34
W-9G	21.93	27.34	19.96	7.38	20.24	7.10	20.08	7.26
W-9R	39.05	27.68	20.75	6.93	21.82	5.86	21.12	6.56
W-10G	22.56	27.43	19.26	8.17	19.45	7.98	19.41	8.02
W-10R	34.01	27.43	19.37	8.06	20.09	7.34	19.52	7.91
W-13G	10.30	10.17	8.03	2.14	3.97	6.20	3.59	6.58
W-13S	29.32	10.10	7.81	2.29	8.61	1.49	7.72	2.38
W-15G[1]	16.99	16.18	14.64	1.54	14.80	1.38	14.73	1.45
W-15S	33.36	16.05	13.56	2.49	14.62	1.43	13.65	2.40
OU2								
GEI-10G	13.91	13.65	0.95	12.70	1.61	12.04	0.86	12.79
WE-10S	29.57	14.99	12.87	2.12	14.32	0.67	13.02	1.97
WE-10R	41.74	13.96	13.10	0.86	13.27	0.69	12.03	1.93
GEI-3G	13.54	16.73	4.21	12.52	5.00	11.73	3.91	12.82
WE-3S	25.67	15.12	13.18	1.94	14.84	0.28	13.62	1.50
WE-3R	46.51	14.99	13.03	1.96	14.57	0.42	13.83	1.16
GEI-5G	14.60	16.08	9.38	6.70	9.99	6.09	9.89	6.19
WE-5S	25.84	15.04	13.17	1.87	14.55	0.49	14.33	0.71
WE-5R	49.64	15.31	13.31	2.00	14.73	0.58	14.43	0.88
GEI-6G	14.97	19.76	11.76	8.00	12.15	7.61	11.90	7.86
GEI-6S	43.67	20.99	18.72	2.27	19.71	1.28	20.69	0.30
WE-6R	47.12	19.62	17.51	2.11	18.60	1.02	19.52	0.10
GEI-7G	13.74	17.23	DRY	<13.74	DRY	<13.74	DRY	<13.74
WE-7S	30.07	15.86	13.61	2.25	14.55	1.31	16.07	-0.21
WE-7R	72.88	15.93	13.75	2.18	14.99	0.94	15.65	0.28
WE-114DR	44.84	23.76	16.54	7.22	18.08	5.68	16.98	6.78

NOTE:
(1) All level, reference, bottom measurements recorded to the top of PVC inner casing.

Table 4-1

Kin-Buc Landfill
Operable Unit 1
First Quarter 2000 Modified Program
Gas Monitoring Well Network/Results

Well (Network) Location	Monitoring Result	
	% LEL	% GAS
GMW-01	0	0
GMW-02	0	0
GMW-03	0	0
GMW-04	0	0
GMW-05	0	0
GMW-06	0	0
Operational Flare Inlet	NA	49.1

Table 5-1
KinBuc Landfill Operable Units 1 and 2
Vertical Gradients Based on First Quarter 2000
Groundwater Elevation Measurements

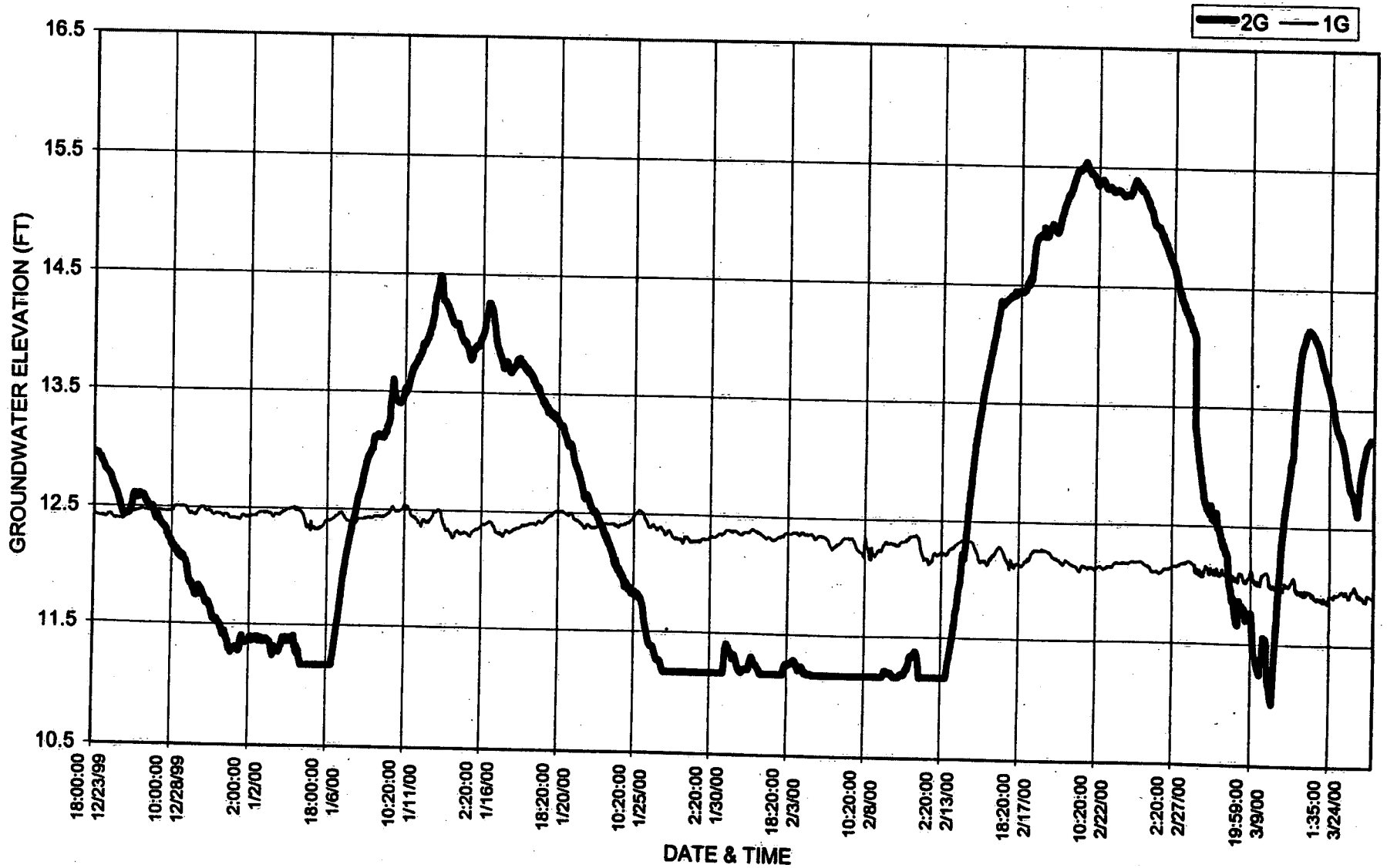
Well Designation	Inside/Outside Slurry Wall	January 4 Gradient	February 8 Gradient	February 28 Gradient
OU1				
W-1G / W-1R	Inside	Down	Down	Down
W-3G / W-3S	Inside	Down	Down	Down
W-3S / W-3RR	Inside	Even (2)	Even (2)	Down
W-5G / W-5S	Inside	Down	Down	Down
W-5S / W-5R	Inside	Even (2)	Even (2)	Up
W-7G / W-7S	Inside	Down	Down	Down
W-7S / W-7R	Inside	Even (2)	Even (2)	Even (2)
W-9G / W-9R	Inside	Down	Down	Down
W-15G / W-15S	Inside (1)	Up	Even (2)	Up
W-6G / W-6S	Outside	Down	Down	Down
W-6S / W-6R	Outside	Even (2)	Even (2)	Even (2)
W-2G / W-2R	Outside	Down	Down	Down
W-4G / W-4S	Outside	Down	Down	Down
W-4S / W-4R	Outside	Even (2)	Even (2)	Even (2)
W-8S / W-8RR	Outside	Up	Even (2)	Even (2)
W-10G / W-10R	Outside	Down	Down	Even (2)
W-13G / W-13S	Outside (2)	Up	Down	Down
OU2				
GEI-10G / WE-10S		Down	Down	Down
WE-10S / WE-10R		Down	Even (2)	Even (2)
GEI-3G / WE-3S		Down	Down	Down
WE-3S / WE-3R		Even (2)	Up	Down
GEI-5G / WE-5S		Down	Down	Down
WE-5S / WE-5R		Up	Even (2)	Even (2)
GEI-6G / GEI-6S		Down	Down	Down
GEI-6S / WE-6R		Even (2)	Down	Down
GEI-7G / WE-7S		Down	Down	Down
WE-7S / WE-7R		Even (2)	Down	Even (2)

(1) Refers to alignment Along Oil Seeps Area extended slurry wall.
(2) Vertical gradient is less than 0.1 foot difference up or down. Designation is even due to manual accuracy considerations.

APPENDIX A

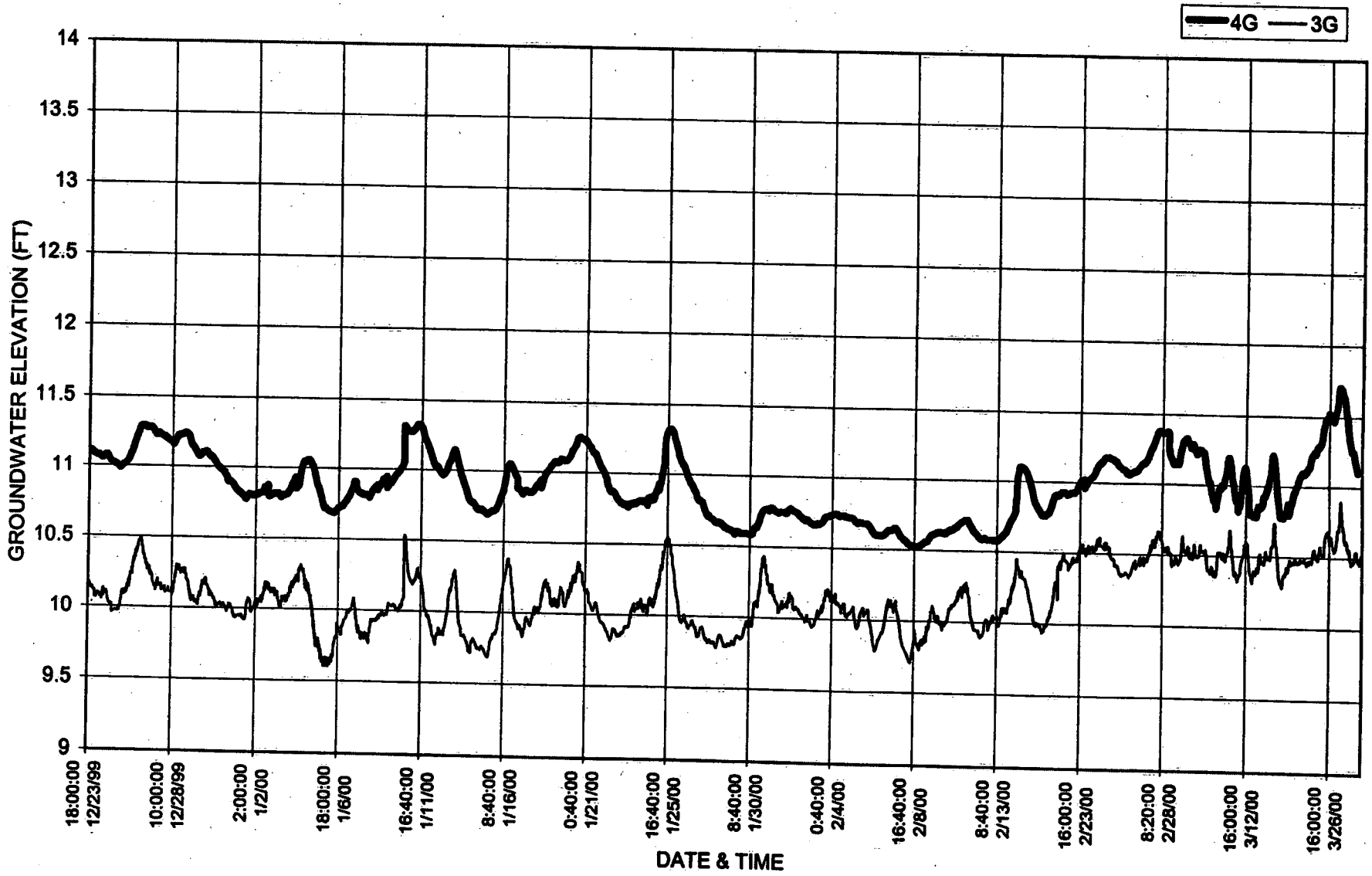
OU1 REFUSE WELLS CONTINUOUS WATER LEVEL MONITORING RESULTS

KIN-BUC LANDFILL GROUNDWATER ELEVATION ACROSS SLURRY WALL IN REFUSE UNIT AT TRANSECT LOCATION No. 1



n://common/proj/kinbuc/15023500.000/1stq00gw/compositehg/w-2g.xls

KIN-BUC LANDFILL GROUNDWATER ELEVATION ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION No. 2



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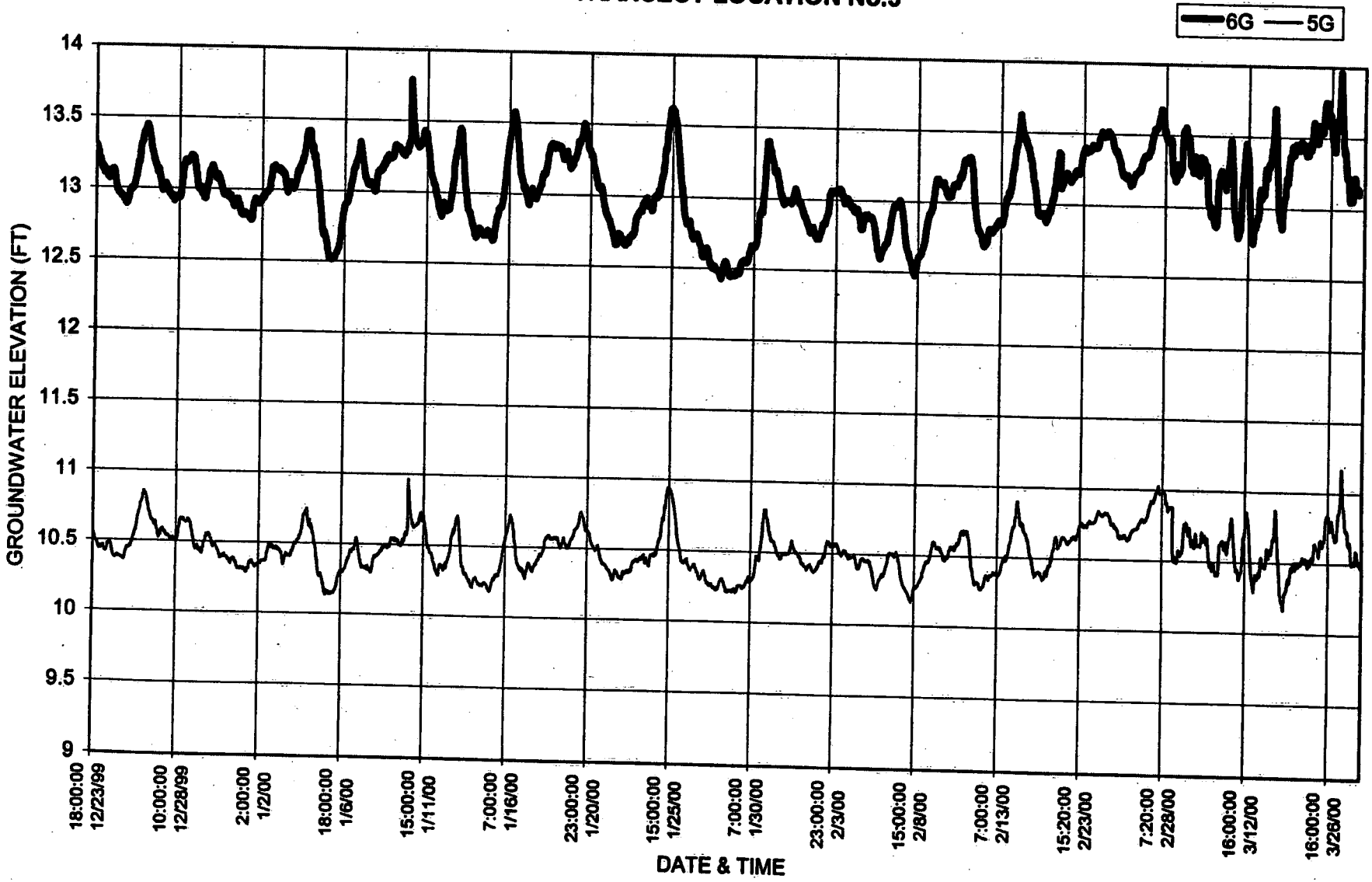
KIN-BUC LANDFILL GROUNDWATER ELEVATION ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION No.3



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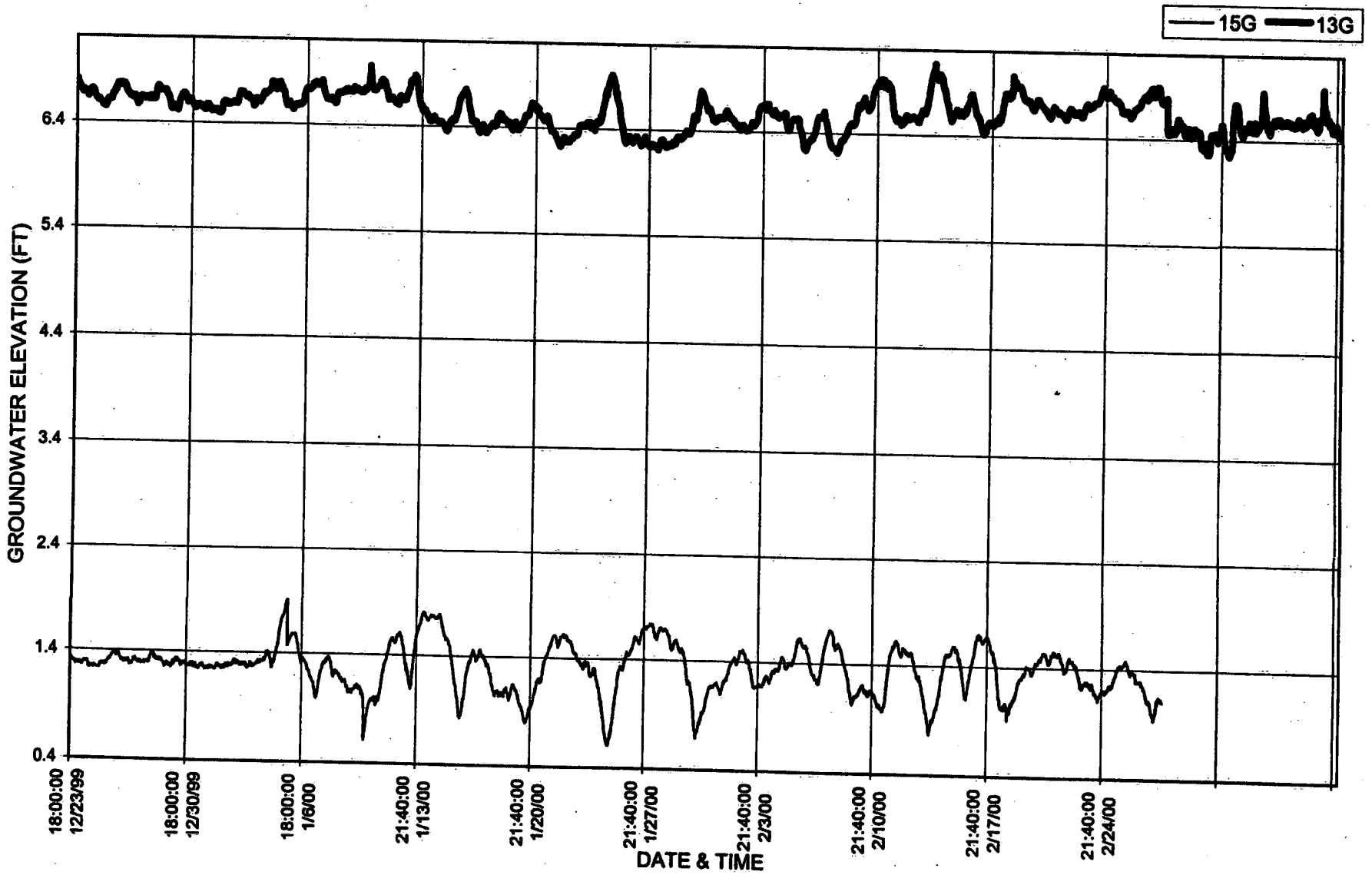
KIN-BUC LANDFILL GROUNDWATER ELEVATION ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION No.4 (OSA)



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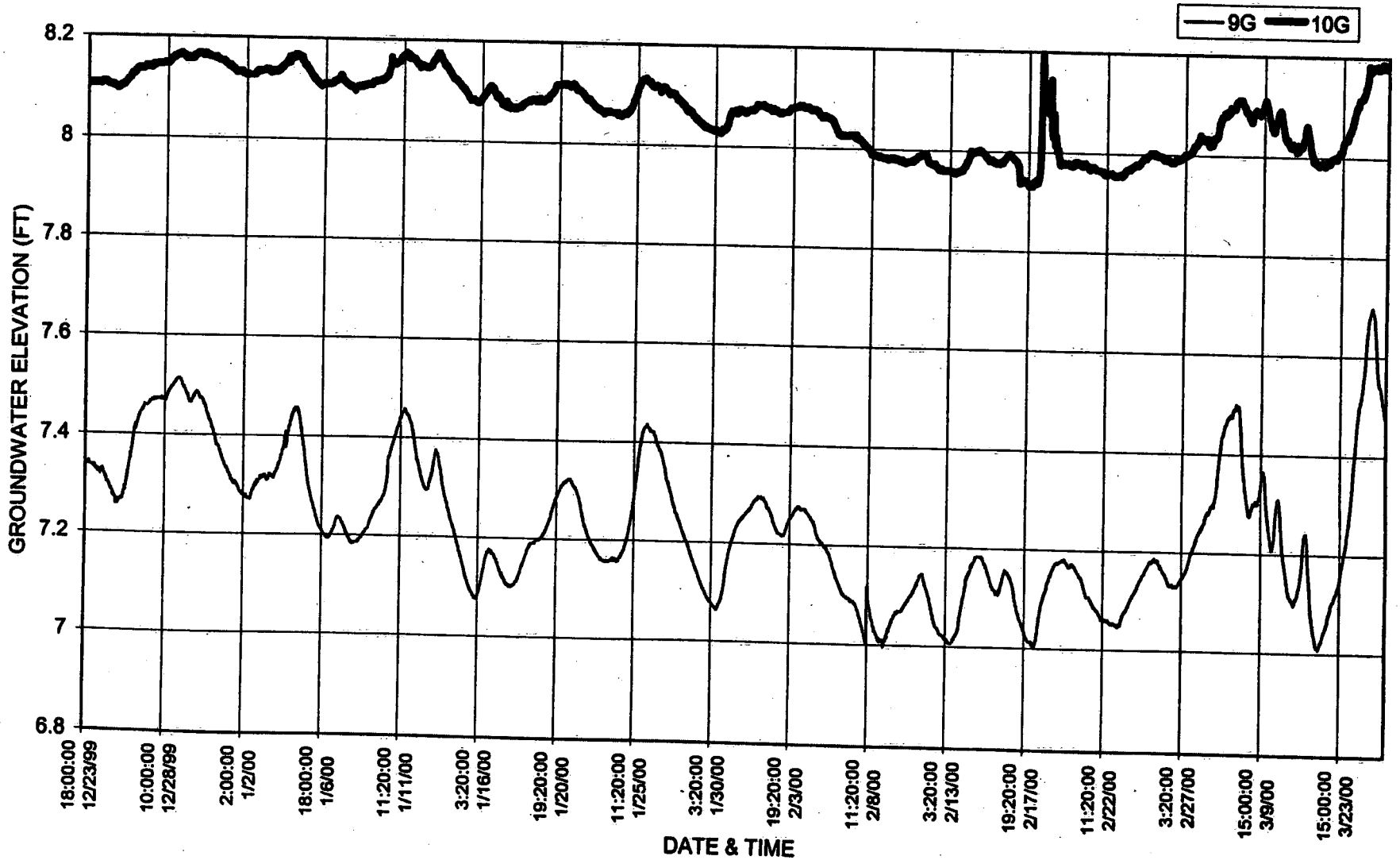
KIN-BUC LANDFILL GROUNDWATER ELEVATION ACROSS SLURRY WALL IN THE REFUSE UNIT AT TRANSECT LOCATION No.5



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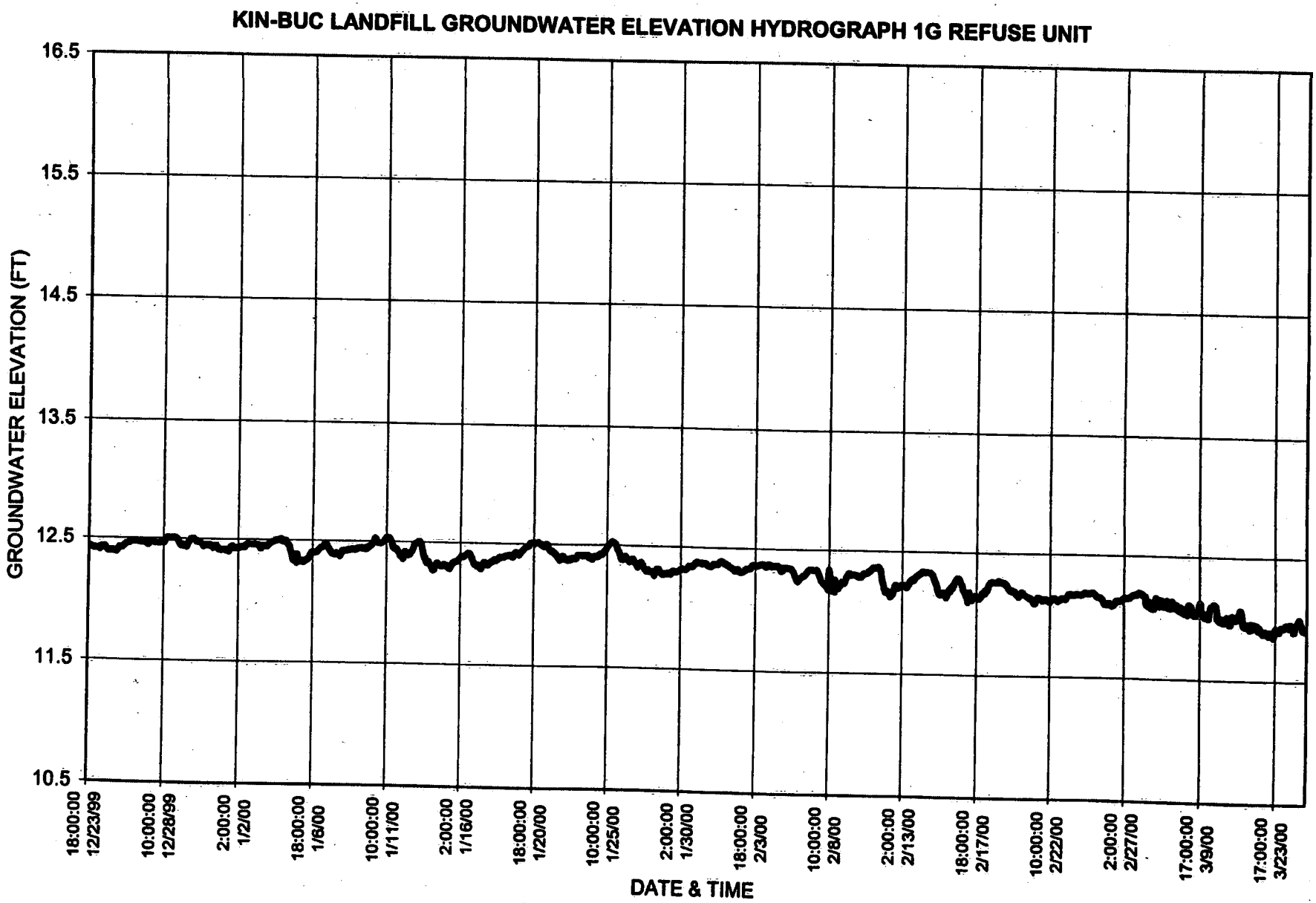
APPENDIX B

OU1 WELLS CONTINUOUS WATER LEVEL MONITORING HYDROGRAPHS



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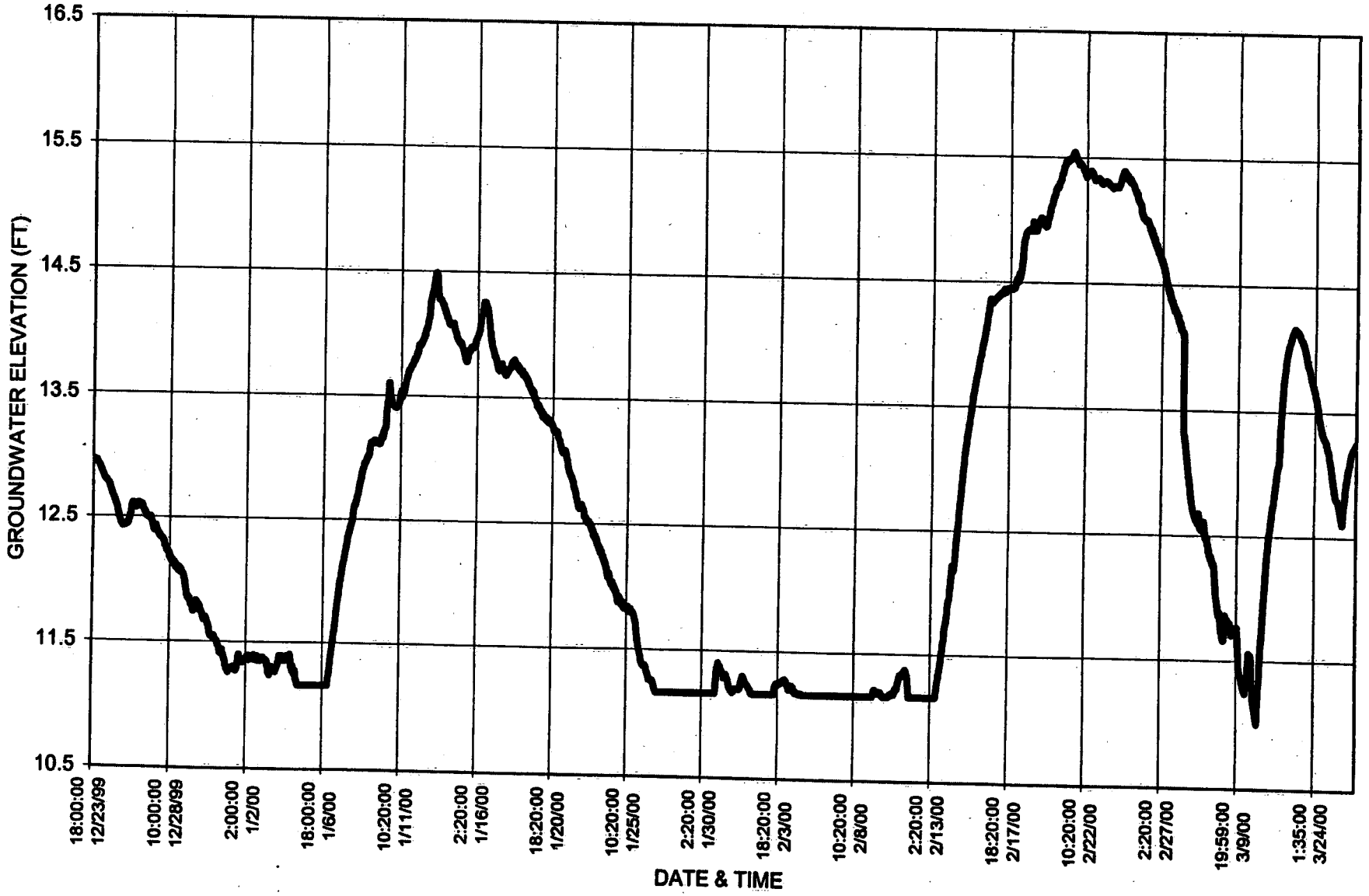
KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 2G REFUSE UNIT



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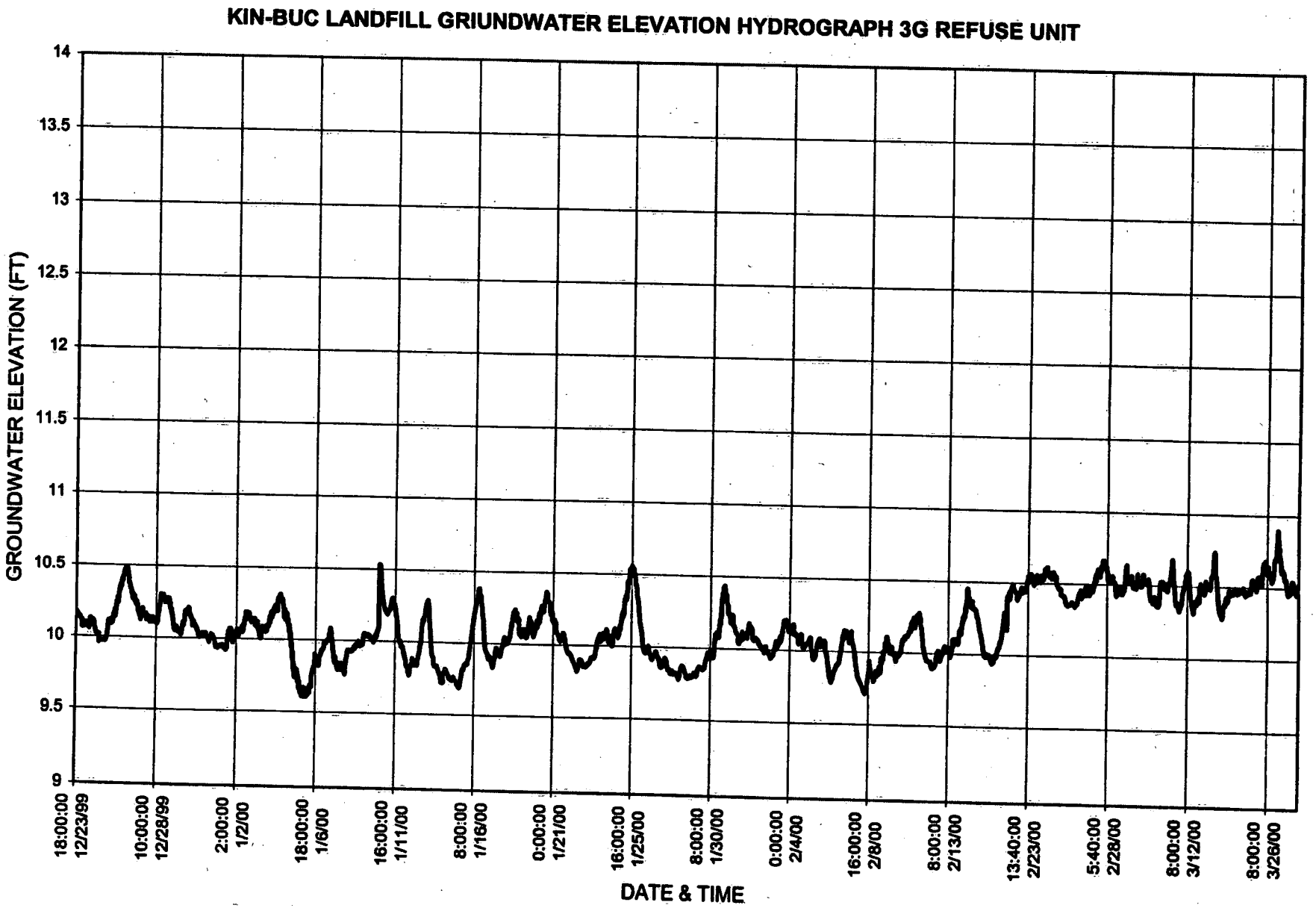

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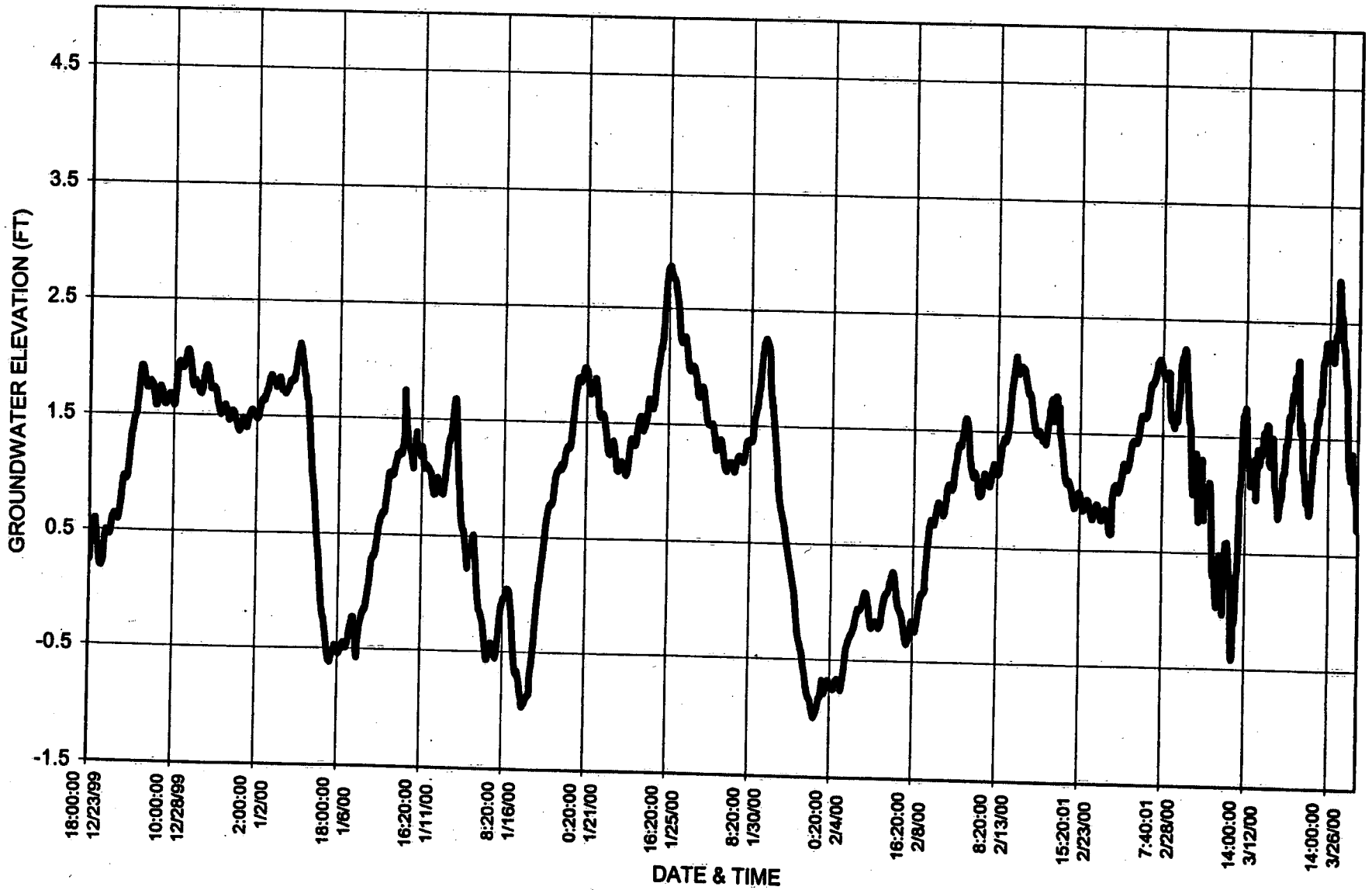
KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 3S SAND AND GRAVEL UNIT



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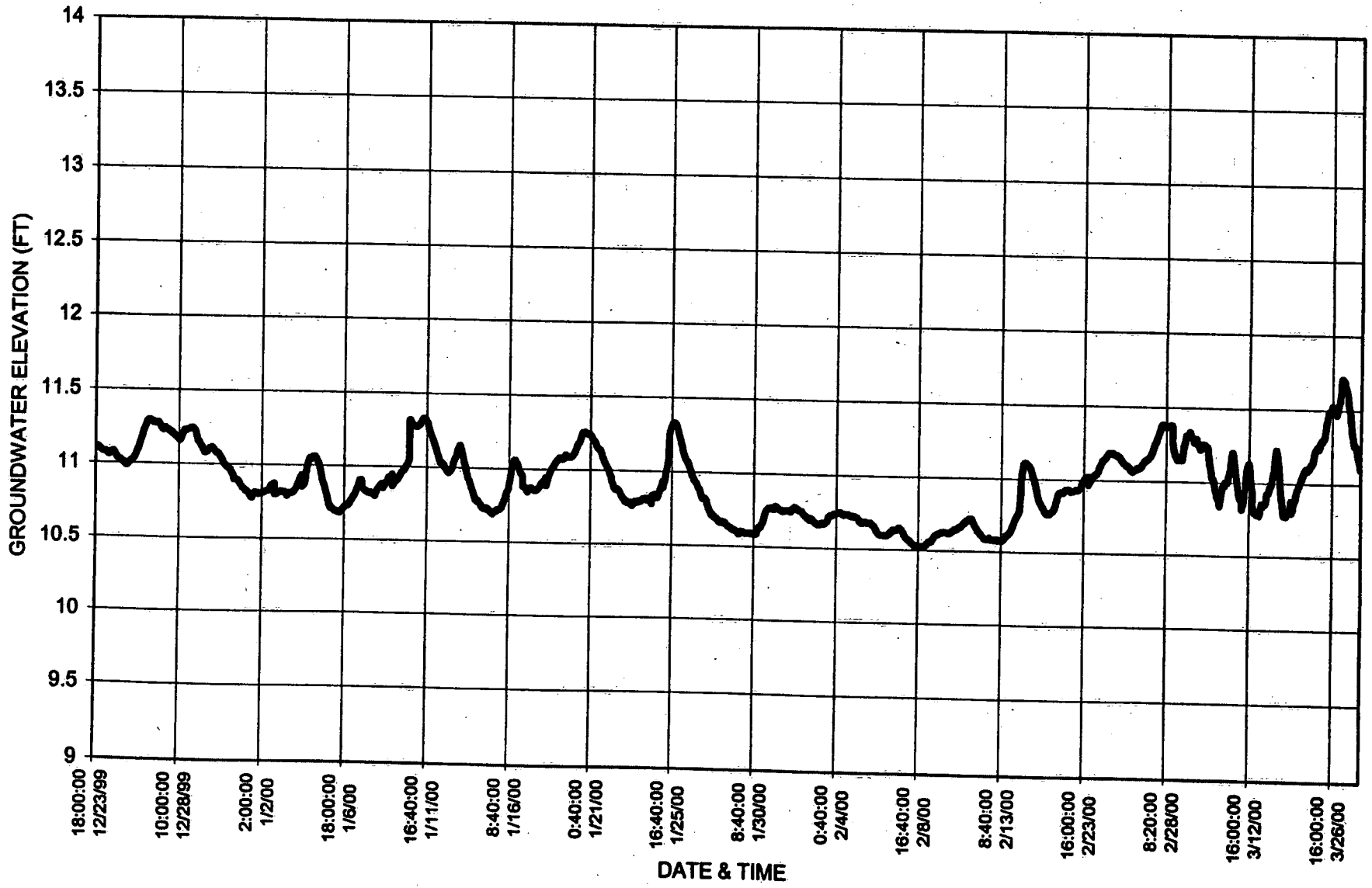
KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 4G REFUSE UNIT



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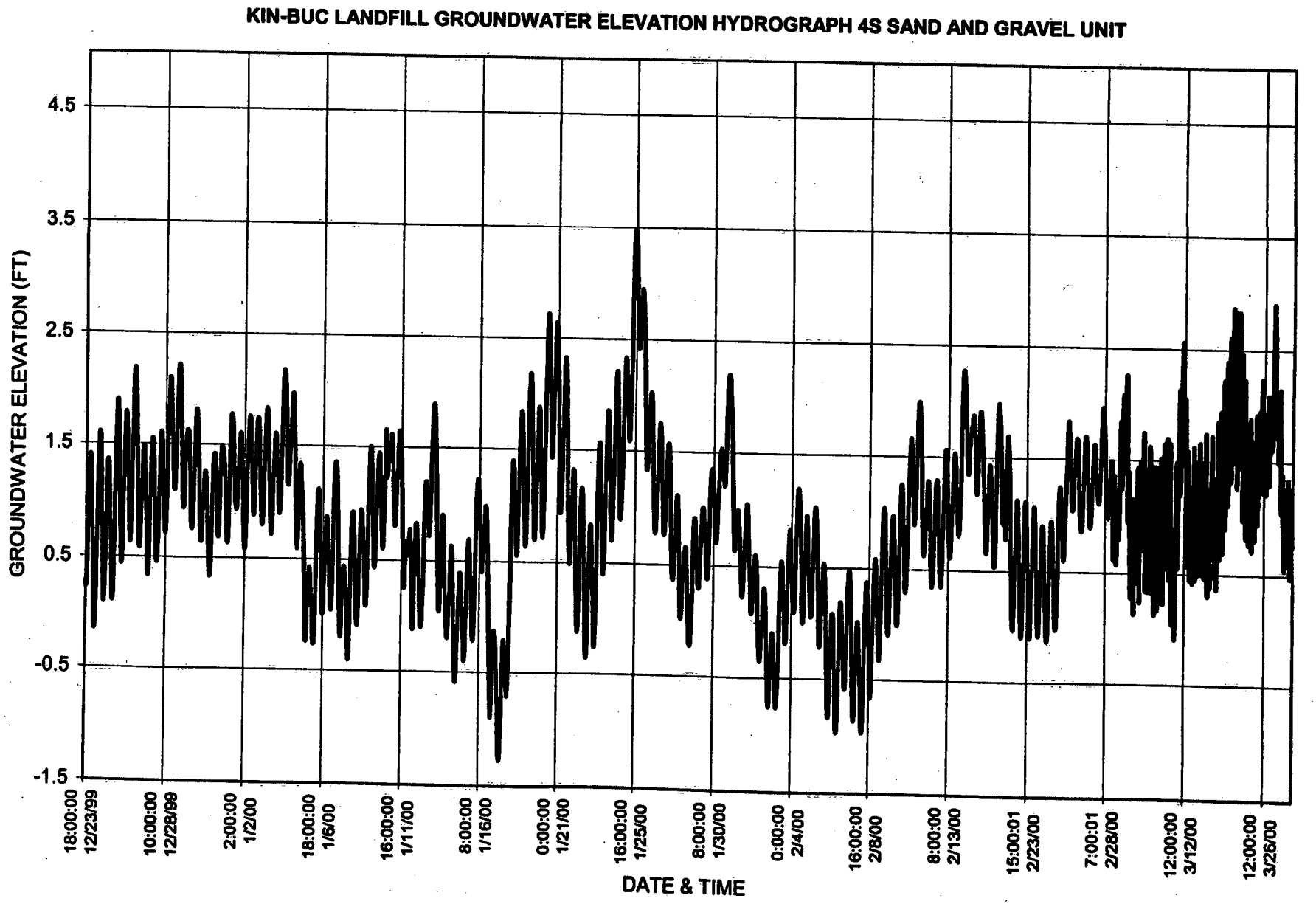

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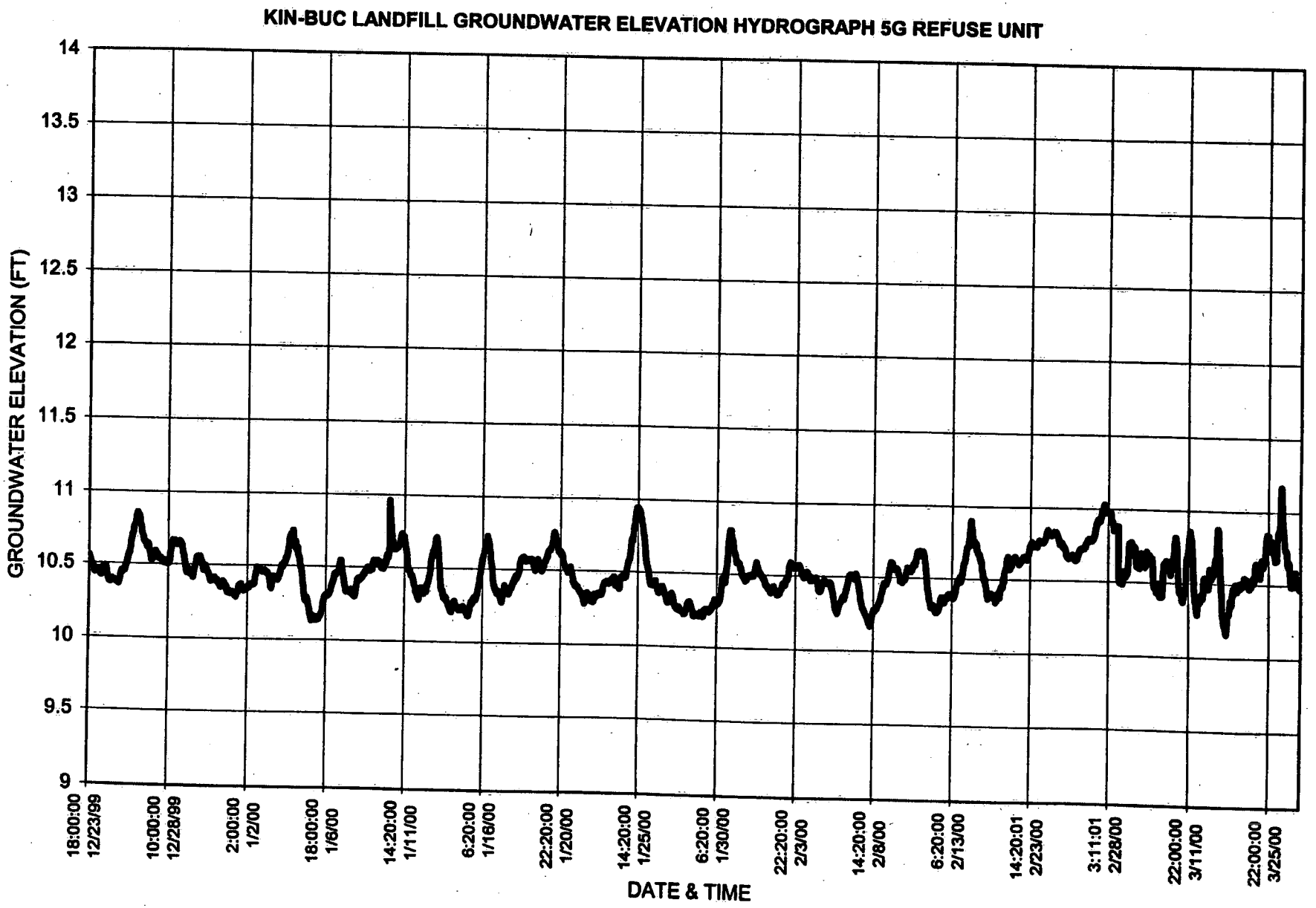

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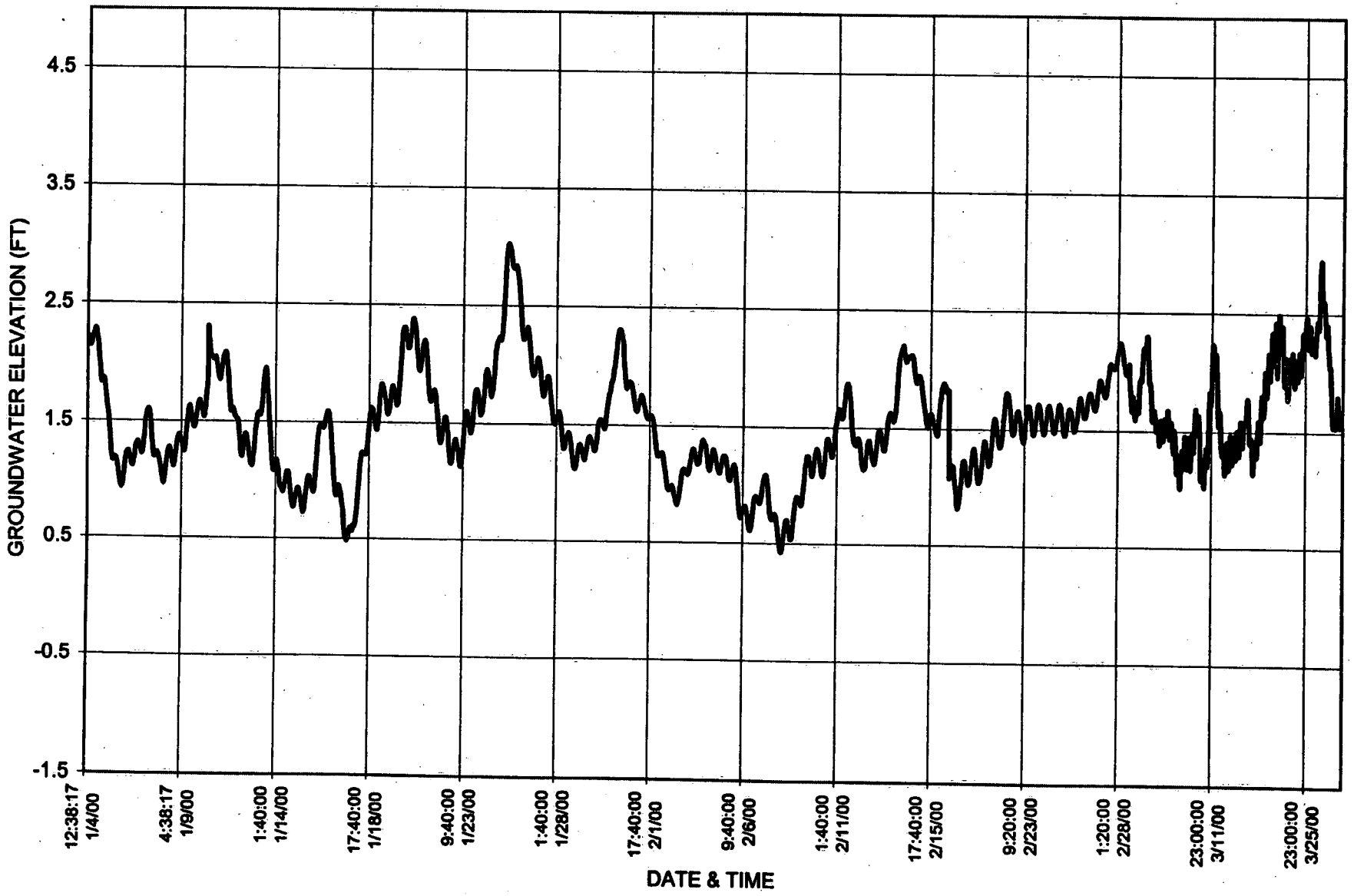
KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 6S SAND AND GRAVEL UNIT



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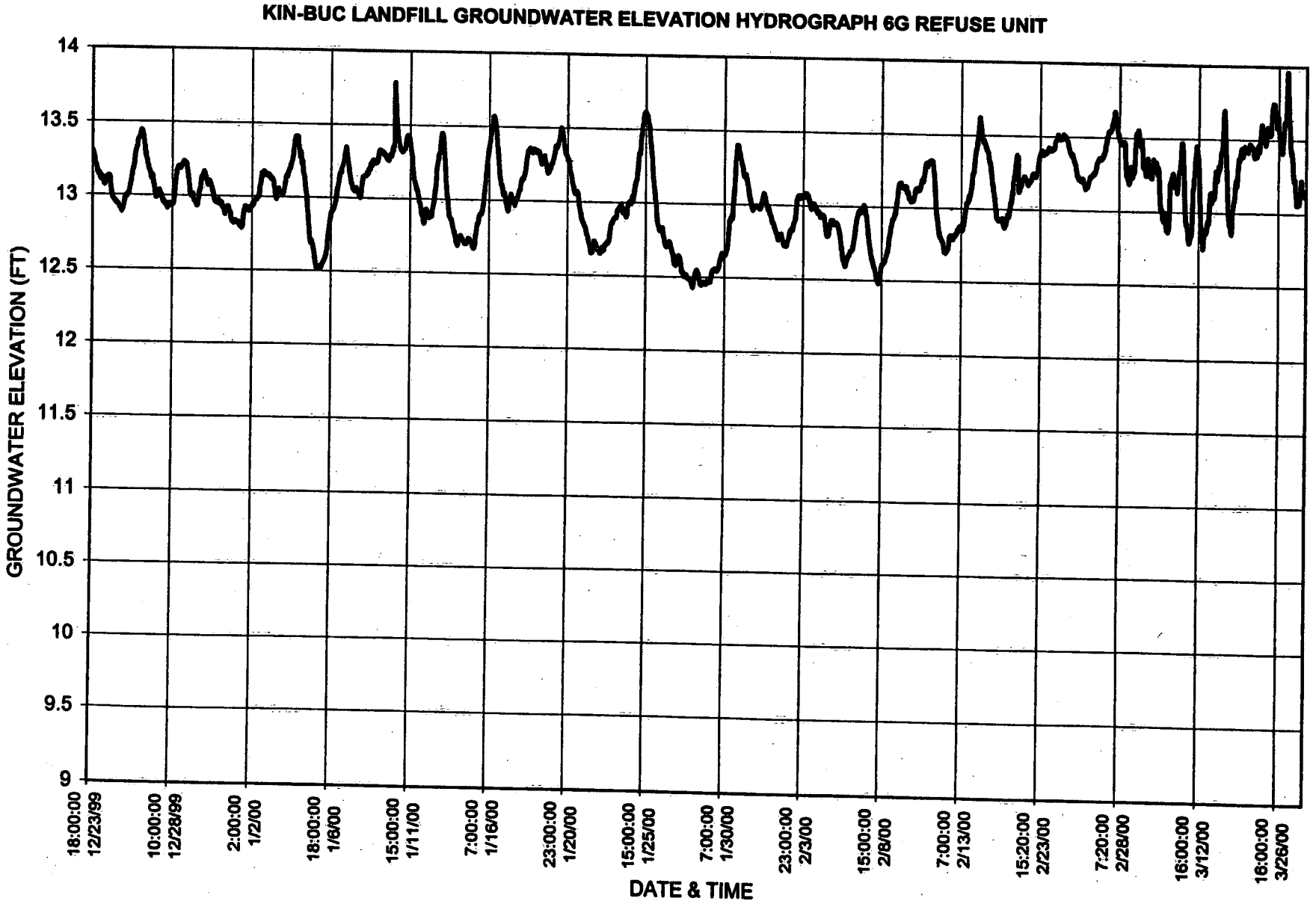

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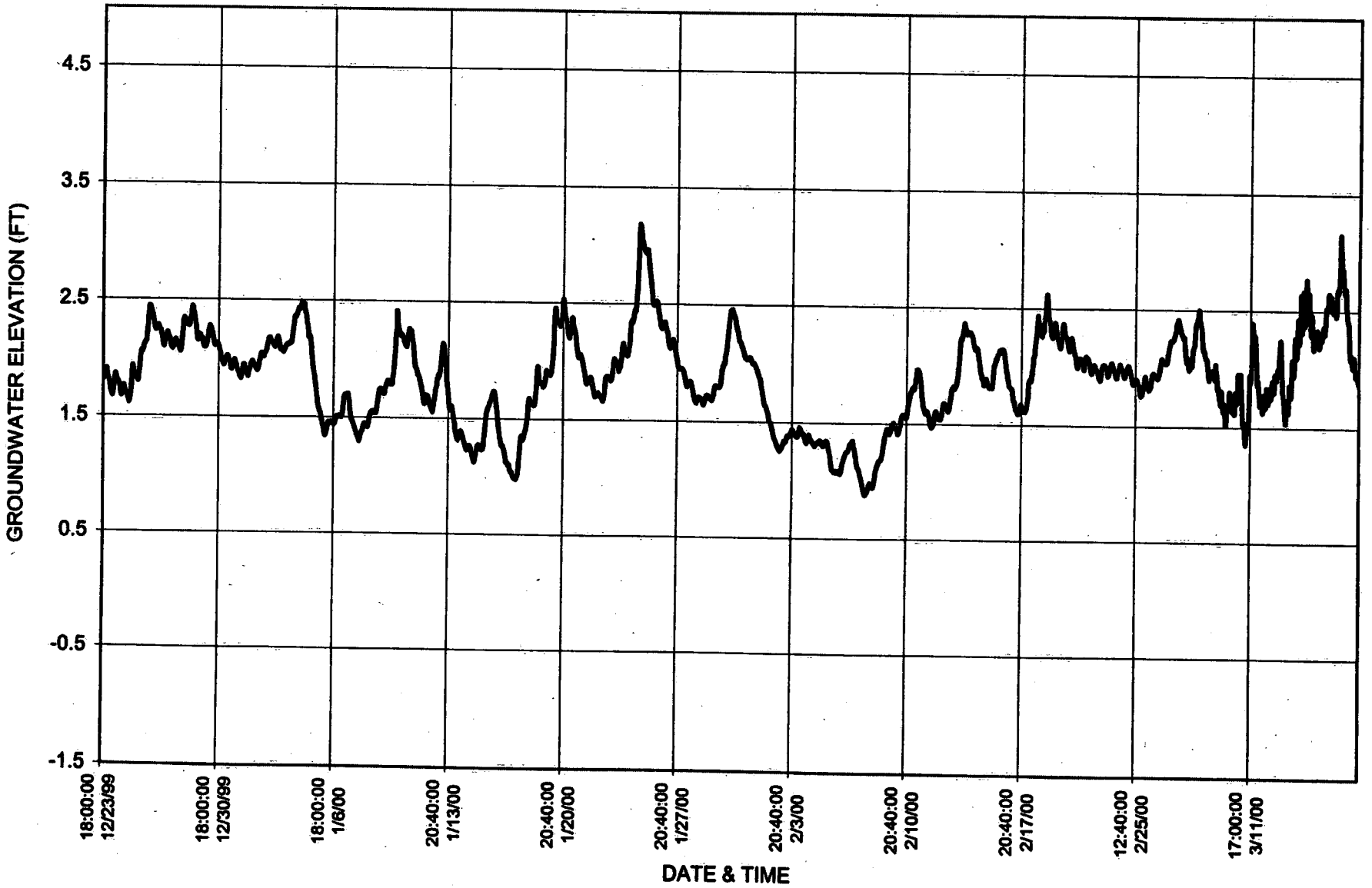
KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 7S SAND AND GRAVEL UNIT



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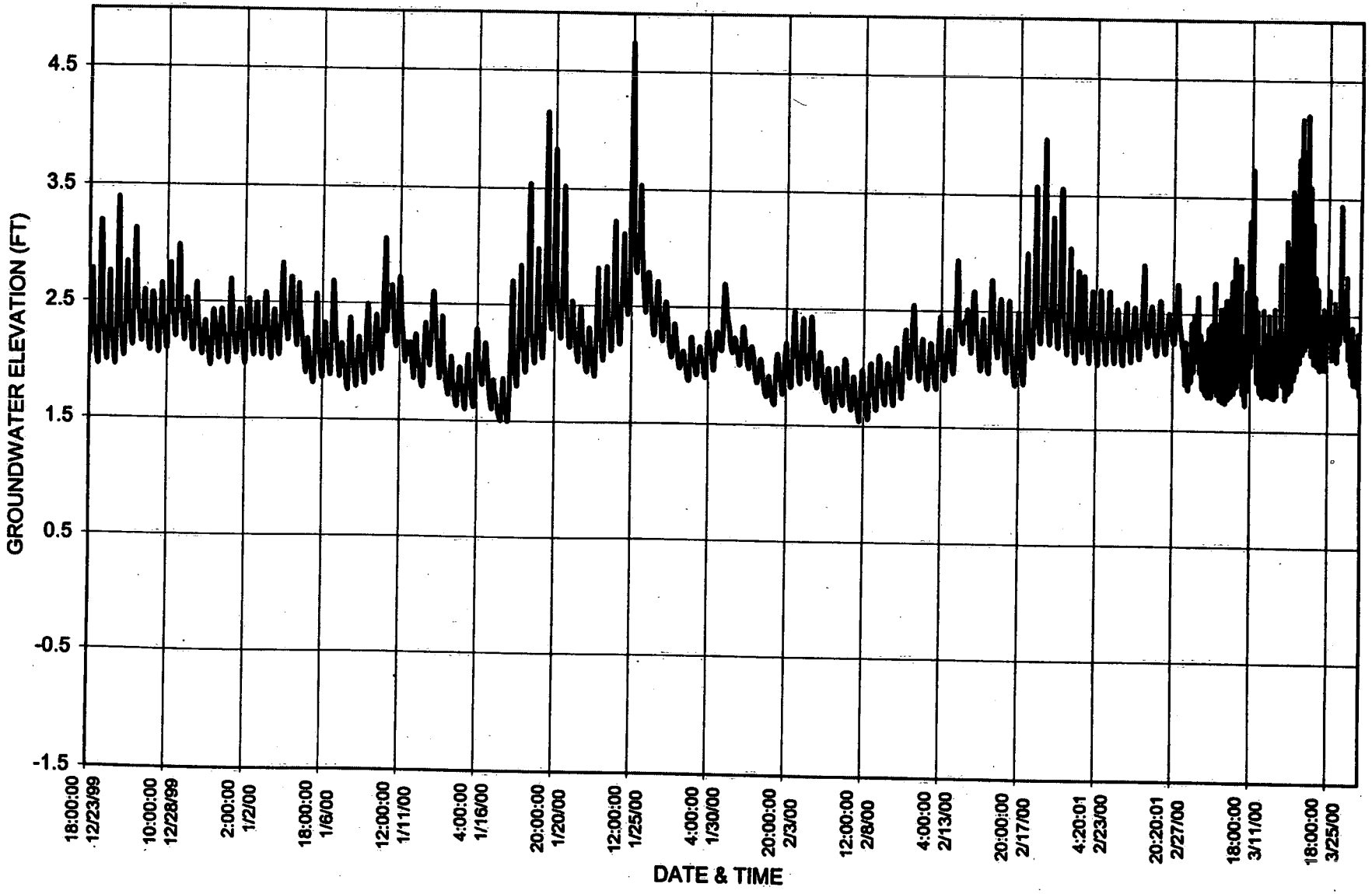

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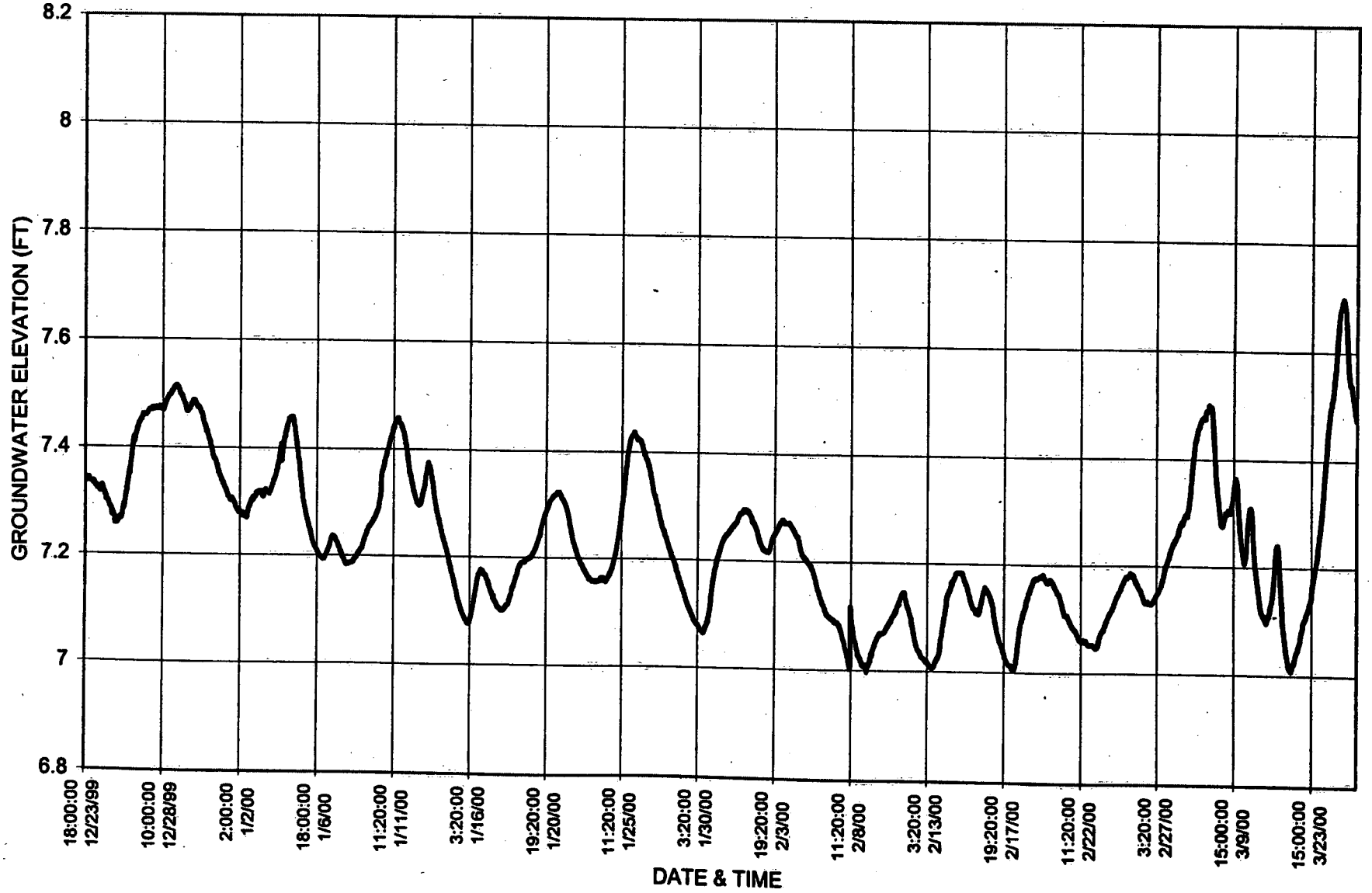
KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 9G REFUSE UNIT



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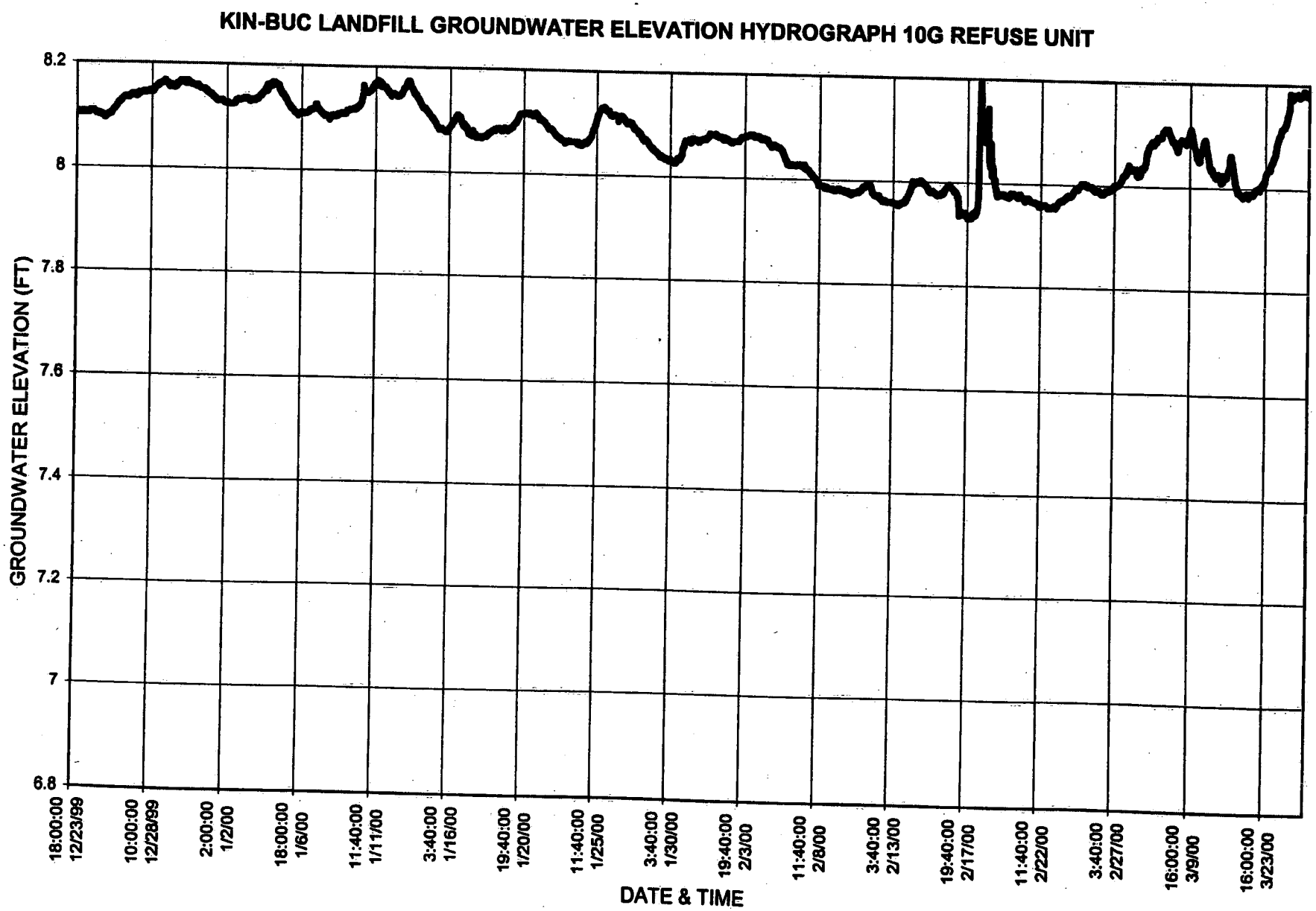
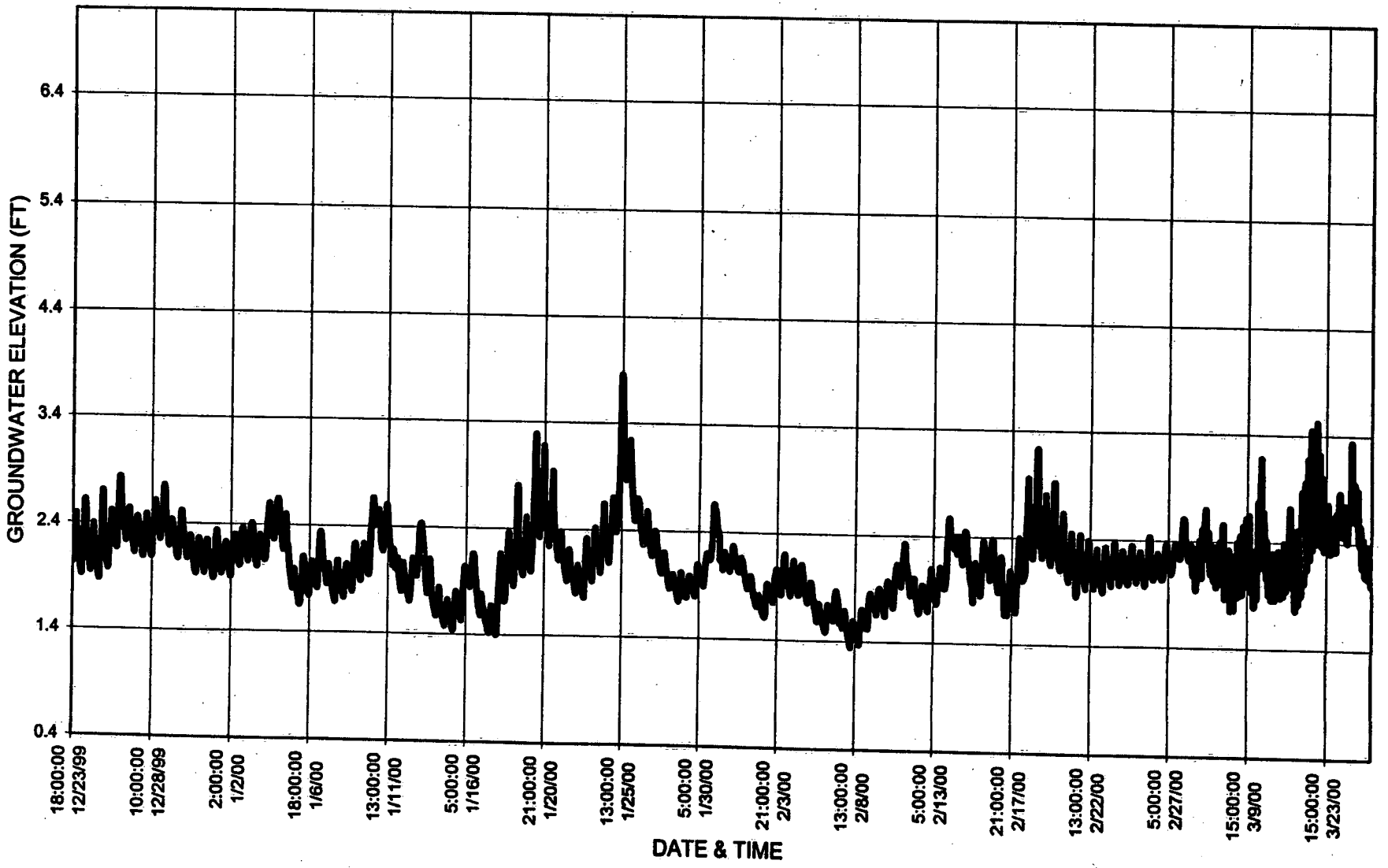

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 10G REFUSE UNIT
GROUNDWATER ELEVATION (FT)
8.2
8
7.8
7.6
7.4
7.2
7
6.8
18:00:00 12/23/99
10:00:00 12/28/99
2:00:00 1/2/00
18:00:00 1/6/00
11:40:00 1/11/00
3:40:00 1/16/00
19:40:00 1/20/00
11:40:00 1/25/00
3:40:00 1/30/00
19:40:00 2/3/00
11:40:00 2/8/00
3:40:00 2/13/00
19:40:00 2/17/00
11:40:00 2/22/00
3:40:00 2/27/00
16:00:00 3/9/00
16:00:00 3/23/00
DATE & TIME

KIN-BUC LANDFILL GROUNDWATER ELEVATION HYDROGRAPH 13S SAND AND GRAVEL UNIT



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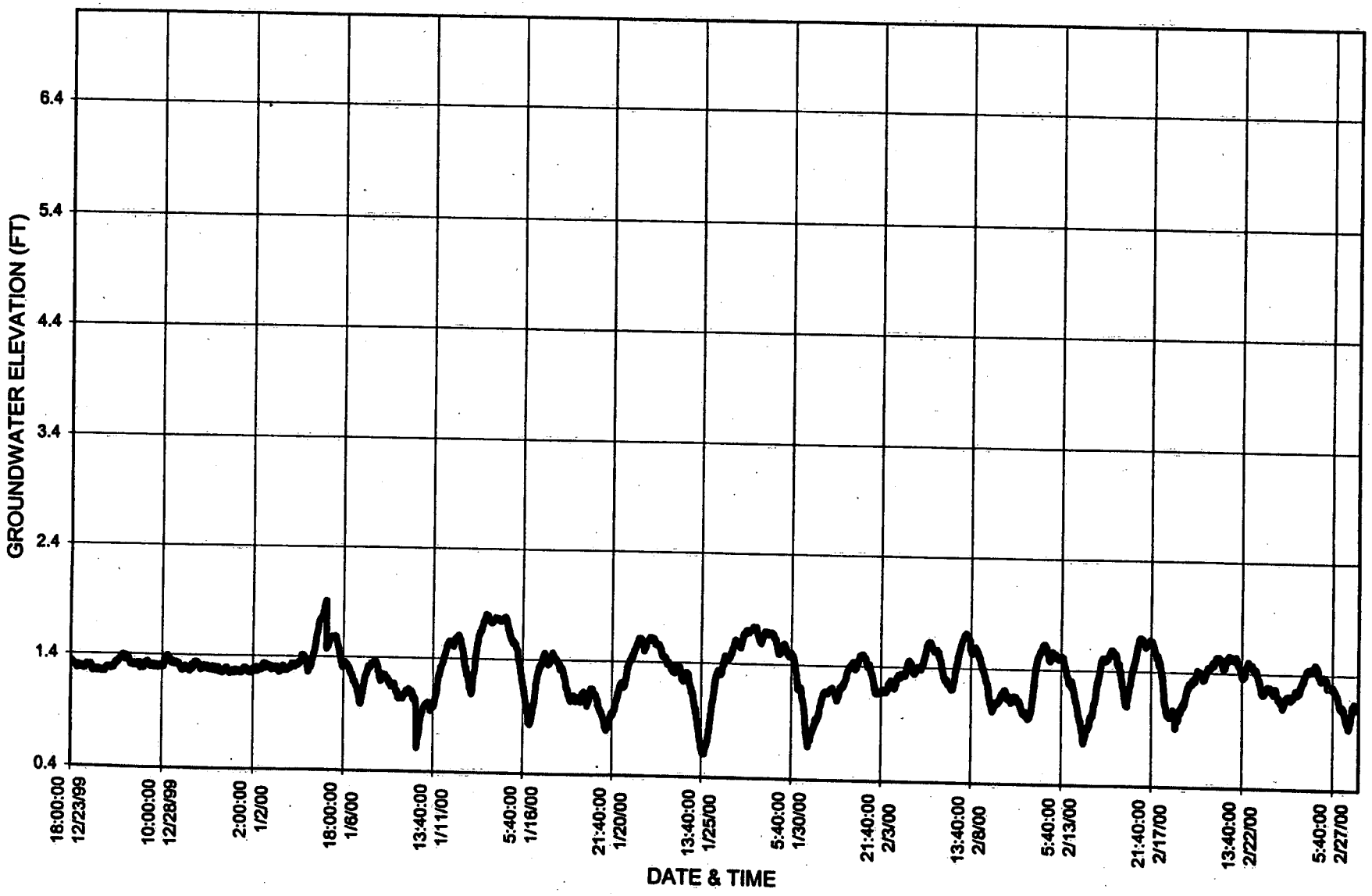

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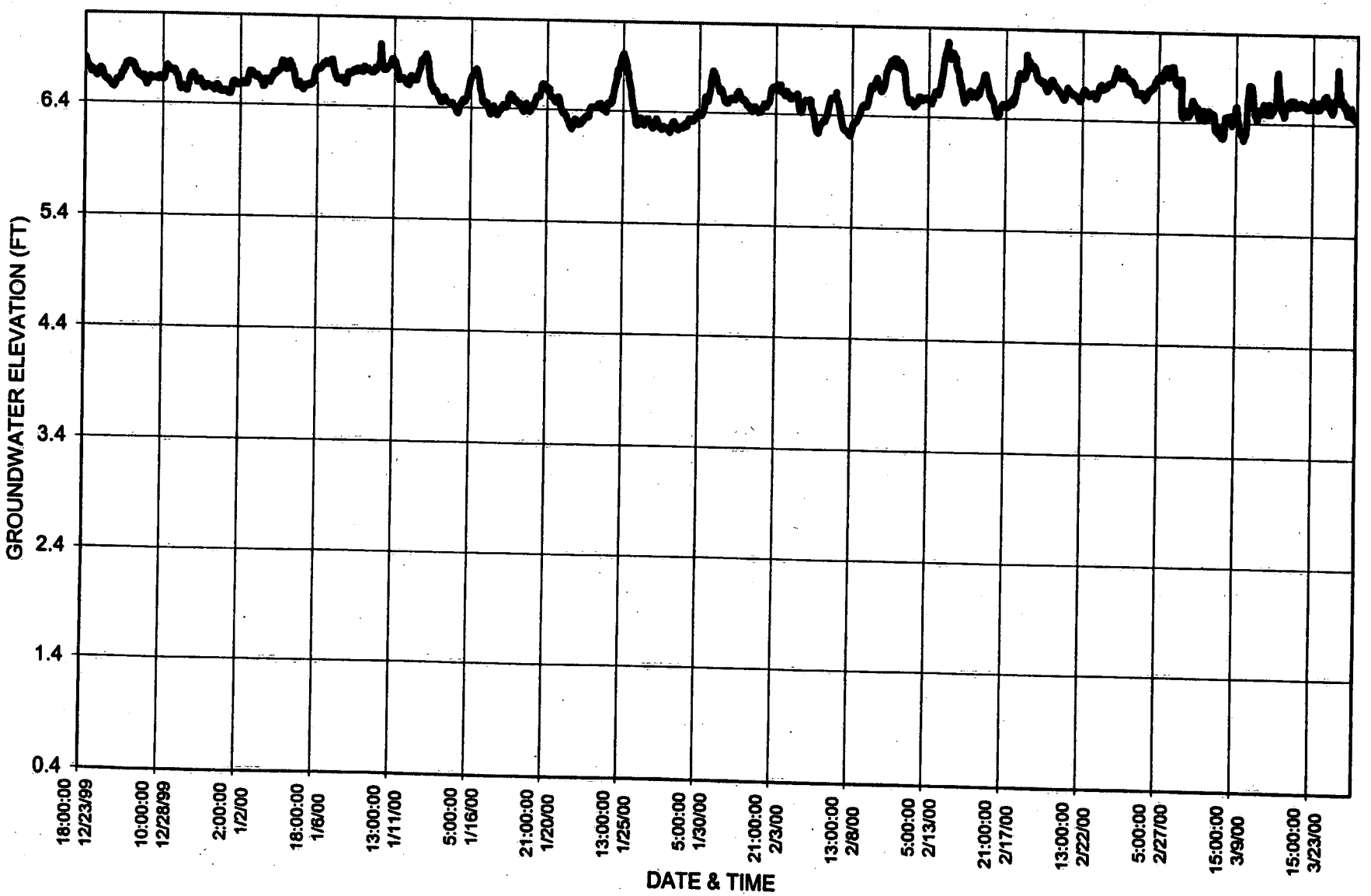

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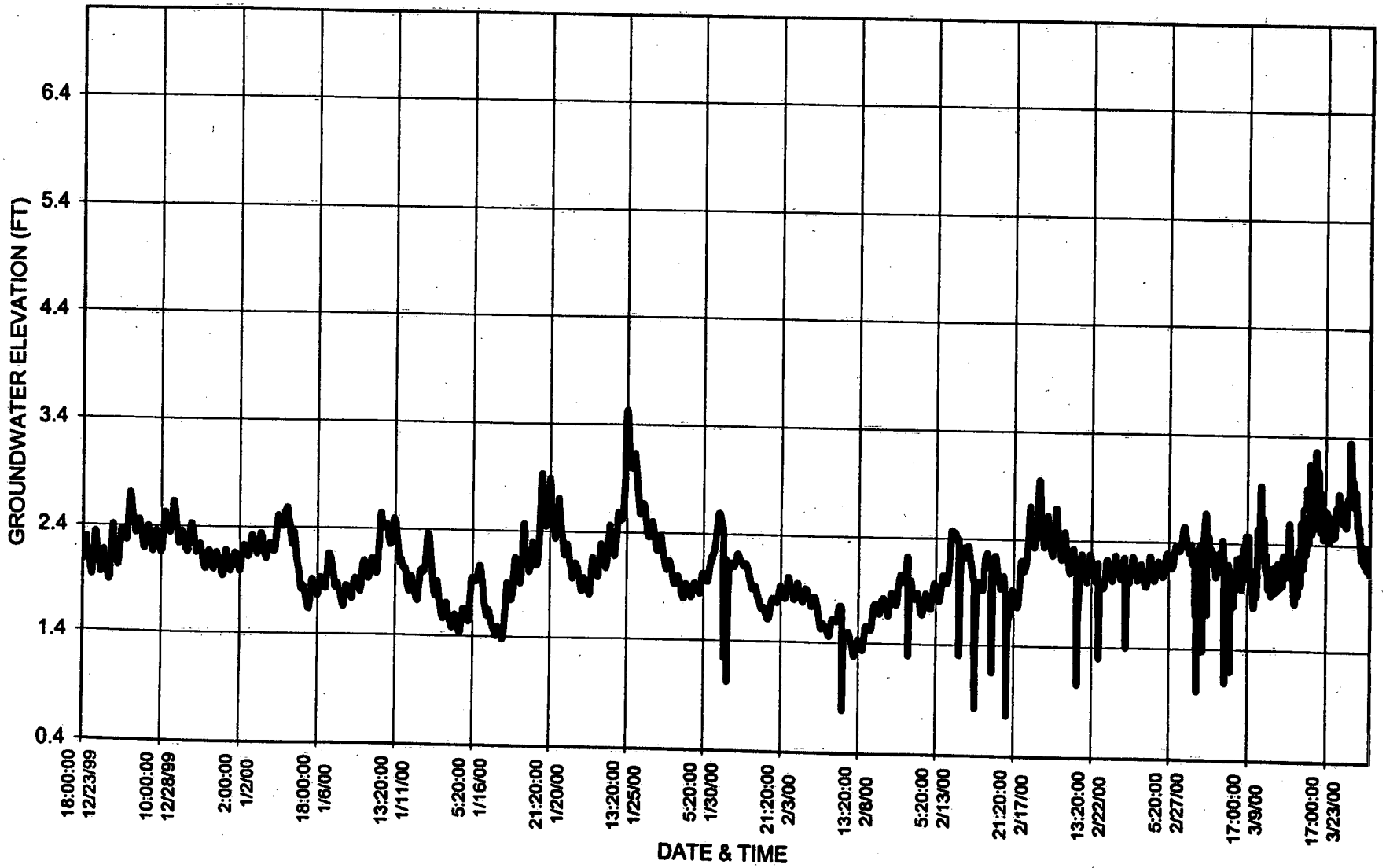

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